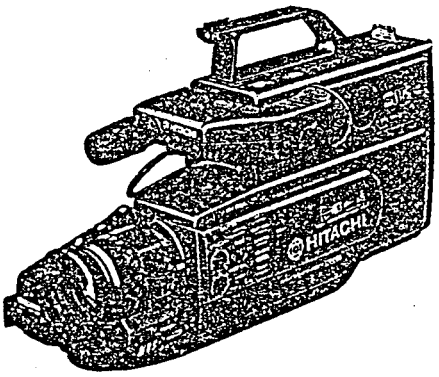
HITACHI

SERVICE MANUAL

TK | No.3014E

VM-S720OE ,E(AV),E(UK)

Technical Data



SPECIFICATIONS

■ General	
Power requirements	9.6V DC
Power consumption	10.3 watts (When AUTO/MAN FOCUS switch is "MAN".)
Dimensions	135(W) x 233(H) x 380(D) mm
Weight	2.8 kg
Operating temperature	0°C ~ 40°C
Storage temperature	−20°C ~ 50°C
■ Video Recorder Section	
Format	VHS and S-VHS
Record/playback system	2 video record/playback heads
Video signal	PAL colour & CCIR monochrome signals 625 lines
Tape speed	23.39 mm/sec.
Video output	1.0 Vp-p, 75 ohm
Mic input	−68 dBs, more than 1K ohm
Audio output	−8 dBs, less than 1K ohm
Earphone output	−26 dBs, (8 ohms terminal)
Fast forward/rewind time	Less than 8 minutes with E-180 cassette
■ Camera Section	
Scanning	625 lines/50 fields/25 frames
Required minimum illumination	10 lux
Camera device	2/3" solid state MOS imager
Lens diameter	52 mm

S-VHS VHS

This video deck is a S-VHS type video recorder. For proper operation, only the S-VHS or VHS type cassette must be used.

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers'! Critical parts are marked with ⚠ in the schematic diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without danger of electrical shock.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

VIDEO CAMERA / RECORDER

April 1989 TOKAI WORKS

CONTENTS

CHAPTER 1

IDENTIFICATION AND OPERATION OF CONTROLS 1-1

CHAPTER 2 DISASSEMBLY

1. CASE 2-1
1-1. Left Case Removal 2-1
1-2. Electronic Viewfinder (EVF) Removal 2-1
1-3. Electronic Viewfinder (EVF) Shoe and Accessory Shoe Removal 2-1
1-4. Cassette Lid Removal 2-2
1-5. Grip Cover Removal 2-2
1-6. Right Case Removal 2-2
2. CIRCUIT BOARD AND TAPE TRANSPORT MECHANISM 2-2
2-1. Main Circuit Board Removal ... 2-2
2-2. Process Circuit Board Removal 2-3
2-3. Zoom Speed Switch Circuit Board Removal 2-4
2-4. Control and Self Timer Switch Circuit Boards Removal 2-4
2-5. Control Switch Circuit Board Removal 2-4
2-6. Character Generator Control Circuit Board Removal 2-4
2-7. Character Generator Generator Function Switch Circuit Board Removal 2-5
2-8. Back-up and S-Connector Circuit Board Removal 2-5
2-9. Sensor Circuit Board 2-5
2-10. Tape Transport Mechanism Removal 2-6
TAPE TRANSPORT MECHANISM IDENTIFICATION - TOP VIEW 2-6
TAPE TRANSPORT MECHANISM IDENTIFICATION - BOTTOM VIEW 2-6
3. TAPE TRANSPORT MECHANISM PARTS .. 2-7
3-1. Cassette Holder and Supply Sensor Circuit Board Removal 2-7
3-2. Upper Cylinder (Video Head) Removal 2-7
3-3. Audio/Control (A/C) Head Removal 2-8
3-4. Full Erase (FE) Head Removal 2-8
3-5. Dew Sensor Removal 2-8
3-6. Supply End Sensor and Mechanism State Switch Removal 2-8
3-7. Take-up Sensor Circuit Board (Take-up Reel Sensor/Take-up End Sensor/Cassette Holder Switch) Removal 2-9
3-8. Lower Cylinder (Cylinder Motor Assembly) Removal 2-9
3-9. Capstan Motor Removal 2-9
3-10. Impedance Roller Removal 2-10
3-11. Take-up Guide Pole, Pressure Guide Arm and Pressure Roller Assembly Removal 2-10
3-12. Tension Arm and Tension Band Removal 2-10
3-13. Supply Reel Table Removal 2-10
3-14. Take-up Reel Table Removal ... 2-11
3-15. Take-up Sub Brake Removal 2-11
3-16. Supply Guide Pole Removal 2-11
3-17. Supply Guide Roller Removal .. 2-11
3-18. Take-up Guide Roller Removal 2-12
3-19. A/C Head Base Removal 2-12
3-20. Supply Guide Roller Base, Take-up Guide Roller Base, Guide Roller Rail and End Lamp Removal 2-12
3-21. Supply Sub Brake Removal 2-13
3-22. Cylinder Base Removal 2-13
3-23. Supply Loading Cam Gear and Take-up Loading Cam Gear Removal 2-13
3-24. Take-up Guide Arm Removal 2-14
3-25. Pressure Roller Control Arm Removal 2-14
3-26. Cassette Holder Lock Slider Removal 2-14
3-27. Reel Gear Block and Loading Motor Removal 2-14
3-28. Loading Gear Removal 2-15
3-29. Tension Pole Drive Arm Removal 2-15
3-30. Drive Gear Removal 2-15
3-31. Relay Gear Removal 2-15
3-32. Cassette Holder Lock Removal 2-16
3-33. Cassette Holder Damper Removal 2-16
3-34. Cam Gear Arm Removal 2-16
3-35. Cassette Holder Lock Drive Arm Removal 2-16
4. LENS BLOCK 2-17
4-1. Lens Block Removal 2-17
4-2. Auto Focus Circuit Board Removal 2-17
4-3. Focus Motor Removal 2-17
4-4. Zoom Motor Removal 2-18
4-5. Iris Block Removal 2-18
4-6. Focus Switch Removal 2-18
4-7. Focus Sensor Circuit Board Removal 2-19
5. ELECTRONIC VIEWFINDER (EVF) 2-19
5-1. Bottom Case Removal 2-19
5-2. Electronic Viewfinder (EVF) Circuit Board Removal 2-19
5-3. Mic Circuit Board Removal 2-19
5-4. CRT Removal 2-20

CHAPTER 3 MECHANICAL ADJUSTMENT

JIGS AND TAPES FOR ADJUSTMENT 3-1

TABLE OF FLAT PACKAGE ICS, /SOLDERING IRON TIPS 3-1

1. TAPE LOADING SYSTEM COMPONENT ADJUSTMENT 3-2
1-1. LOADING CAM GEARS (SUPPLY/TAKE-UP) ADJUSTMENT 3-2
1-2. MECHANISM STATE SWITCH AND DRIVING GEAR ADJUSTMENT 3-2
1-3. LOADING GEAR AND TENSION POLE DRIVE ARM ADJUSTMENT 3-2
2. TAPE TRANSPORT SYSTEM COMPONENTS CHECK/ADJUSTMENT 3-2
2-1. REEL TABLE HEIGHT ADJUSTMENT 3-3
2-2. TENSION POLE POSITION/TENSION ADJUSTMENT 3-3
2-3. SUPPLY/TAKE-UP GUIDE POLES HEIGHT ADJUSTMENTS 3-3
2-4. SUPPLY/TAKE-UP GUIDE ROLLERS HEIGHT ADJUSTMENTS 3-3
2-5. A/C HEAD ADJUSTMENT 3-4
2-6. ADJUSTMENT AFTER REPLACING THE CYLINDER 3-5
3. TENSION AND TORQUE CHECKS 3-5

CHAPTER 4 ELECTRICAL ADJUSTMENT

1. CORRECT SETUP VHS MOVIE ADJUSTMENT 4-1
2. CAMERA SECTION 4-1
2-1. CIRCUIT BOARDS LOCATIONS 4-1
2-2. TEST EQUIPMENT REQUIRED 4-2
2-3. ADJUSTMENT CONDITIONS 4-2
2-4. PRESET POSITION OF CUSTOMER CONTROLS AND SWITCHES 4-2
2-5. CAMERA ADJUSTMENT 4-2
1) Subcarrier Frequency Adjustment 4-2
2) VCO Lock Adjustment 4-2
3) Drive Pulse Frequency Adjustment 4-2
4) Backfocus Adjustment 4-2
5) Flutter Canceller Adjustment 4-3
6) Shading and Surface Roughness Adjustment 4-3
7) Matrix Adjustment 4-4
8) White Balance Control 4-4
9) Black Balance / Luma Setup Ajustment 4-4
10) White Balance Adjustment 4-5
11) Programme AE Adjustment 4-5
12) AIC Level Adjustment 4-6
13) Chroma Level Adjustment 4-6
14) Low Light Chroma Gain Adjustment 4-6
15) Auto White Balance Adjustment 4-7
2-6. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT 4-7
1) EVF Horizontal Hold Adjustment 4-7
2) EVF Focus Adjustment 4-7
3) EVF Picture Tilt Adjustment .. 4-7
4) EVF Centring Adjustment..... 4-8
5) EVF Vertical Size Adjustment 4-8
6) EVF Brightness Adjustment 4-8
2-7. AUTOFOCUS ADJUSTMENT 4-8
1) Autofocus Offset Adjustment .. 4-8
2) Autofocus Sensor Position Adjustment 4-8
2-8. ADJUSTMENT PARTS LOCATION 4-9
3. VTR SECTION 4-10
3-1. CIRCUIT BOARDS LOCATIONS 4-10
3-2. TEST EQUIPMENT REQUIRED 4-10
3-3. ADJUSTMENT CONDITIONS 4-10
3-4. PRESET POSITION OF CUSTOMER CONTROLS AND SWITCHES 4-10
3-5. SYSTEM CONTROL SECTION 4-10
1) Clock Frequency Adjustment ... 4-10
2) Over-Discharge Level Adjustment 4-10
3) Character Position Adjustment 4-11
3-6. SERVO SECTION 4-11
1) Add Vertical Sync Adjustment 4-11
2) Tracking Preset Adjustment ... 4-12
3) Head Switching Point Adjustment 4-12
3-7. LUMA/CHROMA SECTION 4-13
1) Record Luma/Chroma Level Adjustment 4-13
2) 1H Delay Line Output Level Adjustment 4-13
3-8. AUDIO SECTION 4-13
1) Audio Playback Gain Adjustment 4-13
2) Audio Bias Level Adjustment 4-14
3-9. CHARACTER GENERATOR CONTROL SECTION 4-14
1) Character Position Adjustment 4-14
3-10. ADJUSTMENT PARTS LOCATIONS ... 4-15

CHAPTER 5 SCHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS

WHEN USING THIS SERVICE REFERENCE MATERIAL 5-1
LEADLESS COMPONENT IDENTIFICATION .. 5-2
CIRCUIT BOARD CONNECTION DIAGRAM ... 5-5

	SCHEMATIC DIAGRAM	CIRCUIT BOARD
SENSOR	5-7 /	5-9
PROCESS (PROCESS)	5-11 /	5-13
PROCESS (CHARA. ADD/AE CONTROL)	5-15 /	5-13
ZOOM SPEED SW	5-16 /	5-14
LOW LIGHT COMPE.	5-12 /	5-14
CONTROL	5-17 /	5-18
CONTROL SW	5-17 /	5-17
SELF TIMER	5-17 /	5-18
ELECTRONIC VIEWFINDER (EVF)	5-19 /	5-19
INDI.	5-19 /	5-20
FOCUS SENSOR	5-20 /	5-20
AUTO FOCUS	5-21 /	5-21
LED	5-21 /	5-21
MAIN (POWER SUPPLY)	5-22 /	5-41
MAIN (SWITCHING REGULATOR)	5-22 /	5-41
MAIN (SERVO)	5-23 /	5-41
MAIN (SYSTEM CONTROL)	5-25 /	5-41
MAIN (CYL. MOTOR DRIVE)	5-27 /	5-41
MAIN (FUNCTION SW)	5-28 /	5-41
MAIN (AUDIO)	5-29 /	5-41
MAIN (PRE AMP)	5-31 /	5-41
MAIN (CHROMA)	5-33 /	5-41
MAIN (CCD 1H DELAY)	5-35 /	5-41
MAIN (PB.-/REC.-EQ)	5-35 /	5-41
MAIN (LUMINANCE)	5-37 /	5-41
MAIN (TROUBLE SENSOR)	5-39 /	5-41
SUPPLY SENSOR	5-40 /	5-44
SUPPLY END SENSOR	5-40 /	5-44
TAKE-UP SENSOR	5-40 /	5-44
CAPSTAN MOTOR DRIVE	5-43 /	-
MIC	5-43 /	5-43
END LED	5-25 /	5-44
BACK-UP	5-22 /	5-44
CHARACTER GENERATOR CONTROL	5-45 /	5-46
CHARACTER GENERATOR FUNCTION SW	5-45 /	5-45
S-CONNECTOR	5-47 /	5-48

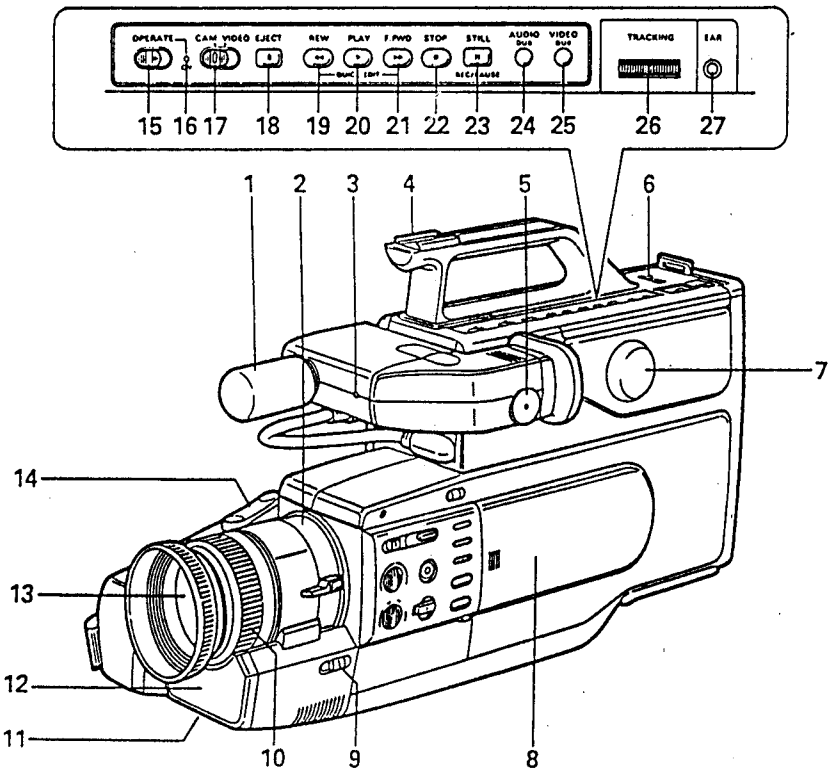
WAVEFORMS
SENSOR 5-8
PROCESS 5-12
ELECTRONIC VIEWFINDER (EVF) 5-20
MAIN (SERVO) 5-27
MAIN (LUMA/CHROMA) 5-32

CHAPTER 6 EXPLODED VIEWS

CABINET SECTION 6-1
ELECTRONIC VIEWFINDER (EVF) SECTION 6-2
LENS SECTION 6-2
CHASSIS (UPPER) SECTION 6-3
CHASSIS (LOWER) SECTION 6-4
LUBRICATION 6-2

CHAPTER 7

REPLACEMENT PARTS LIST 7-1



1. Microphone
   Sensitive to sounds coming from the direction in which the camera is pointed.

2. Zoom Ring (Manual Zooming)
   The picture size can be magnified 8 times with the use of the zoom feature. Just rotate the zoom ring for a close up (T) or wide angle (W) picture. Macro close-up, as close as 1 cm from object, is feasible.

3. Record Indicator
   Flashes for about 10 seconds when the SELF TIMER switch is pressed during record/pause (stand-by) mode and stays on to indicate recording starts.

4. Accessory Shoe
   Used to attach the Multi Image Generator (provided) or the camera light. (Not supplied)

5. Diopter Control
   To use the electronic viewfinder without eyeglasses on, turn this control knob for your optimum focus adjustment.

6. BATTERY Eject Lever
   Release the battery attached to the video camera/recorder.

7. Earphone Speaker
   When you record or play a tape in the camera/recorder you can hear the audio through this speaker. To control the volume, adjust the SPEAKER volume control located on the bottom of the camera/recorder.
   NOTE: If feed back noise (howling) occurs during recording, turn the SPEAKER volume control down and attach the earphone to EARPHONE jack to monitor the sound.

8. Titler Control Door
   Slide the door to reveal the title control. (See page 30 for details.)

9. AUTO/MAN FOCUS Switch
   Set this switch to the "AUTO" position for automatic focusing, and to the "MAN" position for focusing with the focus ring. When the switch is pushed inwards while in the "MAN" position, automatic focusing is performed until the switch is released.

10. Focus Ring
    Do not attempt to manually turn the focus ring when the camera/recorder is in the auto focus mode.

11. Lens Cap Holder
    Place the lens cap in this holder when you are ready to record a scene. The holder also prevents the lens cap from swinging around on its cord.

12. Auto Focus Window
    To automatically focus the camera lens, this window transmits and receives infrared light which is reflected off the subject. Make sure you don't obstruct this window when recording.

13. Lens
    F1.2 (11 ~ 88 mm) 8:1 power zoom lens features with auto focus and auto iris functions.

14. Power Zoom Switch
    This switch performs zooming electrically.
    "W": Picture becomes wider gradually.
    "T": Picture becomes telescopic gradually.

15. OPERATE Switch
    Press this switch to turn camera/recorder on. Press again to turn camera/recorder off.
    OPERATE light illuminates when this switch is pressed and camera/recorder is on.

16. OPERATE/Dew Indicator Light
    Flashing of the light indicates dew condensation on camera/recorder mechanism. While this light is flashing, the unit will not operate. If this ocurs, eject the tape and leave the power on. When the light stops flashing, the unit can be operated.

17. VIDEO/CAM Select Switch
    This switch changes the camera/recorder to the record mode or to the playback mode. The switch must be in "CAM" position for recording.

18. EJECT Button
    Press to insert or remove the cassette.

19. REW Button
    Press this button during stop or fast forward mode, and fast-rewinding starts. "REWIND" indication appears in the viewfinder whenever the tape counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the rewind direction approximately 3 times faster than the normal speed to confirm the recorded contents. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
    NOTE: You can also visually scan backward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.

20. PLAY Button
    Used for playback of tape.
    NOTE: When the camera/recorder is record/pause (stand-by) mode, pressing and holding this button will play the tape at normal.

21. F.FWD Button
    Press this button during stop or rewind mode, and fast-forwarding starts. "FAST FWD" indication appears in the viewfinder whenever the tape counter or time remaining is present. Press the button during playback of tape, and the tape is played back in the forward direction approximately 3 times faster than the normal speed to confirm the recorded content. Press PLAY button to return to normal playback mode or press STOP button to stop tape movement.
    NOTE: You can also visually scan forward when the camera/recorder is record/pause (stand-by) mode by pressing and holding this button.

22. STOP Button
    The STOP button is used to stop playback, rewind, and fast forward operations. The STOP button has no effect during record operation.

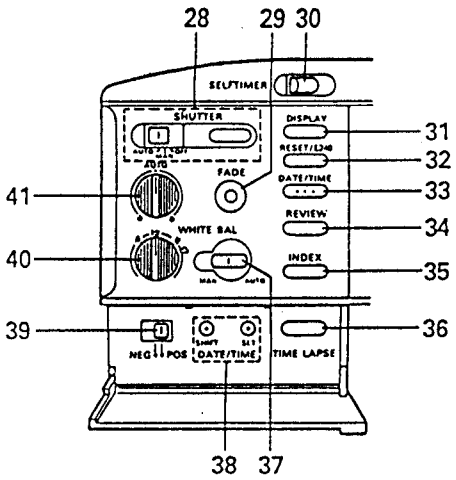
23. STILL/REC/PAUSE Button
    When this button is pressed during recording, the tape stops and the camera/recorder enters the record/pause (stand-by) mode. When this button is pressed again, the tape runs to resume recording. This button may be also used to display a still picture during playback mode.

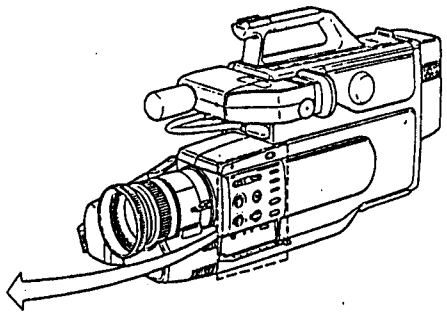
24. AUDIO DUB Button
    This button is used to record new audio in place of existing audio without erasing the video.

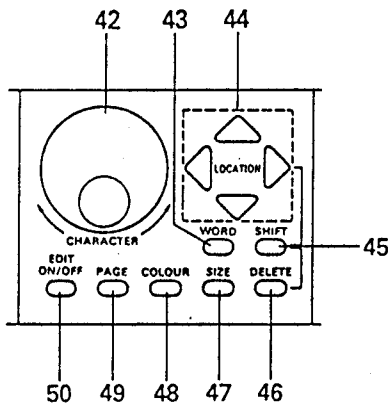
25. VIDEO DUB Button
    This button is used to record new video in place of existing video without erasing the audio.

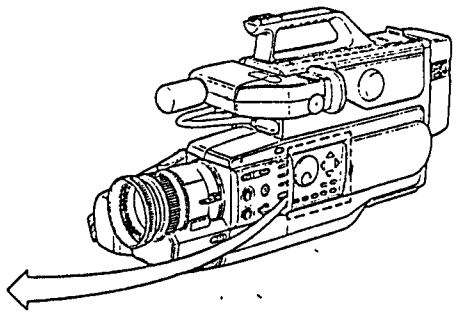
26. TRACKING Control
    Used when playing a tape recorded on another VTR. Adjust for best picture. At all other times leave it in the center position, which can be found as a small detent in the movement of the knob.

27. EARPHONE Jack
    Sound being recorded by the microphone or played back may be monitored by earphone to this jack.









28. SHUTTER SPEED Control Switches
Used to control the shutter speed during recording and/or record/pause (stand-by) mode.

29. FADE Button
During recording you can add a professional touch to your recordings by fading in and out of scenes.
NOTE: When you use FADE button to fade in and out, the sound will also fade in and out with the picture.

30. SELF TIMER Switch
This switch allows you to start recording after about 10 seconds when the switch is pressed.

31. DISPLAY Button
Pressing this button once causes a 4 digit tape counter and battery indicator to appear in the camera/recorder's viewfinder. Pressing the button again will cause counter memory mark "M" to appear.
Pressing the button third time will cause battery indicator and the amount of time remaining on the cassette in the camera/recorder.
Press a 4th time to delete all displays.

32. RESET/E-240 Button
When the tape counter is displayed in the viewfinder, pressing the button resets the counter to "0000". When the time-remaining read-out is displayed, pressing the button changes the display for extended length E-240 tapes, the indicator next to the button will light.

33. DATE/TIME Button
Press this button to display the date and clock in the viewfinder. Whenever the date and clock appear in the viewfinder, they will be recorded on the tape.

34. REVIEW Button
Used to review the last few seconds of the recorded segment in the record/pause mode.

35. INDEX Button
When this button is pressed during a recording, the camera/recorder records an invisible index mark on the tape.
This is useful later when the tape is played back in a VTR that features the indexing system called "VHS Index Search System" because you will be able to quickly locate each index mark.

36. TIME LAPSE Button
This button allows time lapse and one shot recording.

37. WHITE BALANCE Switch
When this switch is in the "AUTO" position, the colour balance is set automatically. Place the switch in "MAN" position to adjust the colour balance to suit your personal preference.

38. DATE/TIME Set Buttons
These buttons are used to set the clock (time and date) in your camera/recorder so it can be recorded on your tapes for future reference.

39. NEG/POS Switch
Normally set to "POS".
Set to "NEG" for special effects as in a negative film.

40. Manual White Balance Control
Use this control to adjust the colour balance manually. Set the WHITE BALANCE switch to "MAN", and while viewing colour monitor, adjust this control for a nature picture.

41. IRIS Control
When this control is in the "AUTO" position, the iris is controlled automatically. Turn this control to the right or left for manual iris control.

42. CHARACTER Control
Rotate this control to select the characters or words for your title.

43. WORD Button
Press the WORD button and then rotate the CHARACTER control to select one of the 50 words stored in the titler's memory.
After the word you wish to use is displayed, press a LOCATION button to add the word to your title.
Press the WORD button again to return the CHARACTER control to selection of characters instead of words.

44. LOCATION Buttons (◄, ▲, ►, ▼)
Press one of the LOCATION buttons after displaying the title page in the viewfinder to locate the position for the first character you wish to program.
Release the LOCATION button when you have located the position.
Press the LOCATION button, after selecting the character or word for the first position, to move to the next position.
The LOCATION buttons are also used for correcting errors.
Press the LOCATION button while holding the SHIFT button to position the completed title in the desired location on the page.

45. SHIFT Button
Press and hold the SHIFT button, and press the DELETE button to delete all of the characters displayed on a page.
Press and hold the SHIFT button and press a LOCATION button to position the completed title on the page.

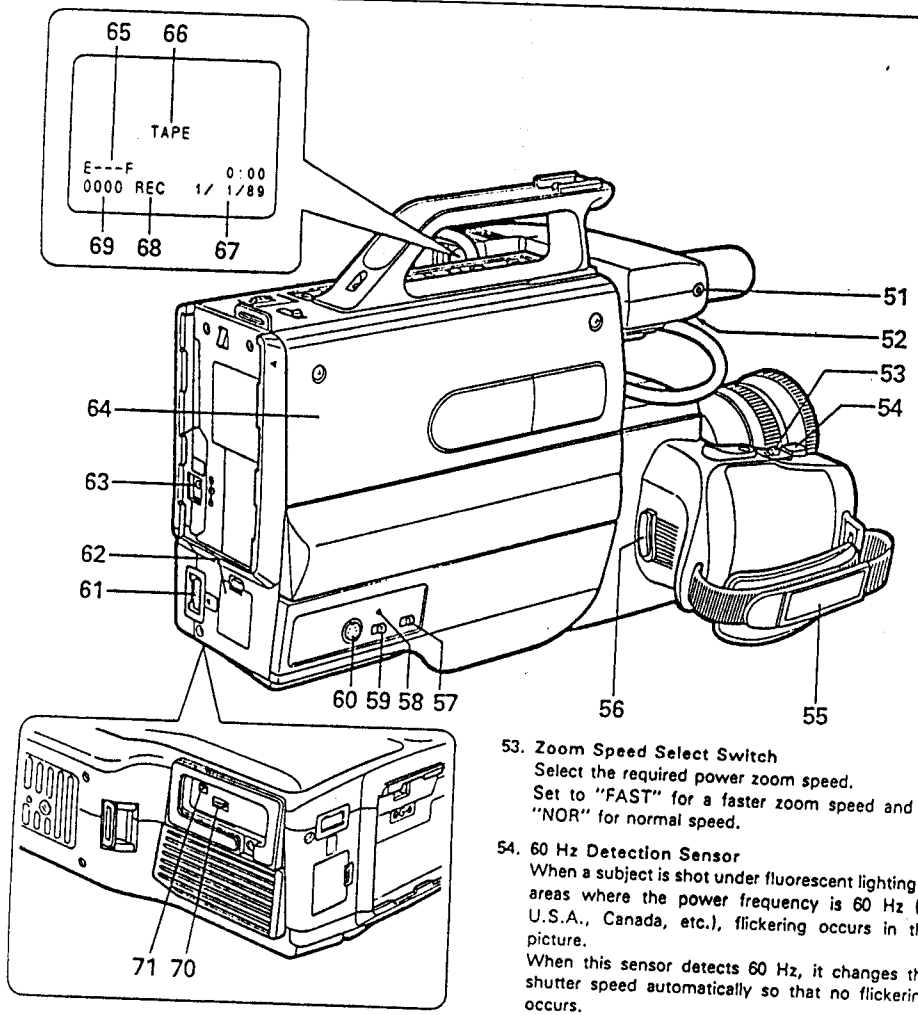
46. DELETE Button
Press the LOCATION button to place the flashing cursor on a character you wish to delete from the title. Press the DELETE button to delete the character.
Each time you press the DELETE button, the cursor will move backwards and delete a character.
Press and hold the SHIFT button while pressing the DELETE button to delete all the characters displayed.
Press and hold the PAGE and (▲) LOCATION buttons, while pressing the DELETE button to delete all the titles in memory.

47. SIZE Button
The titler has two character sizes. Press the SIZE button to select the size of the characters.

48. COLOUR Button
The titler can create titles in eight colours. Press the COLOUR button repeatedly to select a colour. The colour selected (BLACK, WHITE, BLUE, GREEN, RED, CYAN, YELLOW or MAGENTA), appears in the viewfinder.

49. PAGE Button
The titler can store up to ten different titles.
Press the PAGE button repeatedly to select pages 1 through 10.
The page number you have selected will appear in the viewfinder.
The PAGE button is used with the DELETE and (▲) LOCATION button to delete all titles from memory.
Press the PAGE or EDIT/ON/OFF button after you have completed your title to store it in memory.

50. EDIT/ON/OFF Button
Press this button to display the title page in the viewfinder to create or record titles.
Press this button to remove the titler graphics from the veiwfinder when you are finished.



51. MIC Jack
Connect an external microphone (Not supplied) here to record sound from the external microphone.
NOTE: Connecting an external microphone automatically switches off the built-in microphone.

52. MIC NORMAL/WIND Switch
This switch is used to reduce noise that occurs due to wind. Place the switch in the "NORMAL" position for normal use.

53. Zoom Speed Select Switch
Select the required power zoom speed.
Set to "FAST" for a faster zoom speed and to "NOR" for normal speed.

54. 60 Hz Detection Sensor
When a subject is shot under fluorescent lighting in areas where the power frequency is 60 Hz (in U.S.A., Canada, etc.), flickering occurs in the picture.
When this sensor detects 60 Hz, it changes the shutter speed automatically so that no flickering occurs.

55. Hand Strap
Adjust to best fit to your hand.

56. Record Start/Stop Button
This button is used to control the camera/recorder. When this button is pressed with the camera/recorder set to the recording mode, the tape runs to start recording.
When this button is pressed again, the tape stops and the camera/recorder enters the record/pause (stand-by) mode.

57. EDIT Switch
When copying a tape onto another VTR, set this switch to "ON".
The copied tape will provide clearer picture.

58. S-VHS Indicator
This indicator lights up when the camera/recorder is recording or playing back in the S-VHS mode. It does not light up when the camera/recorder is recording or playing back in the VHS mode.
NOTE: An S-VHS cassette must be used to reocrd in the S-VHS format.

59. S-VHS Switch
Use to select S-VHS or normal VHS for recording. It has no effect during playback. Normally set it to S-VHS. S-VHS indicator above the switch lights when the camera/recorder is recording or playing back in S-VHS mode.

60. S VIDEO Out Jack
Use this connector jack when you want to send the video signal out to the TV or the VTR having an S VIDEO IN jack.
NOTE: This connector allows you to take full advantage of the new S-VHS recording format.

61. AV OUT Jack
Connect the audio/video output cable to this jack and to the audio and video inputs of your TV/monitor receiver. You may also connect the RF converter unit to this jack and your TV receiver.

62. Clock Battery Compartment
Pull the tab to open the cover and install the clock battery (provided).

63. DC IN 9.6V Jack
When using the AC adaptor/charger, connect one end of the DC cord (provided) to this jack and the other end to "DC OUTPUT" of the AC adaptor/charger. When using the car cord (optional), connect this jack and the car's cigarette lighter socket.

64. Cassette Holder
Press EJECT button to open the cassette holder. Be aware of the cassette direction when inserting.
NOTE: Power source must be connected to open the cassette holder.

65. BATTERY Indicator
Indicates the battery condition;
- When the battery is fully charged, the display reads "E---F". When the battery is very near empty, only one dash remains. When the last dash starts blinking, you should find an alternative power source or recharge the battery.

66. TAPE Indicator
When the record start/stop button is pressed, if a cassette without its safety tab is inserted or there is no cassete, "TAPE" blinks for several seconds.

67. DATE/TIME Indicator
Indicate the date/clock during the record or record/pause (stand-by) mode. You can record the clock and/or date with object when recording.

68. MODE Indicator
Indicates the operating modes;
- "REC" appears during the record mode.
- "REWIND" appears during the rewind mode.
- "FAST FWD" appears during the fast forward mode.
- "PAUSE" appears during the record/pause (stand-by) mode.

69. TAPE COUNTER
Shows tape counter (0000 – 9999) and time remaining.

70. SPEAKER Volume Control
This control lets you increase or decrease the sound level of the built-in earphone speaker.

71. MIC MIX (ON/OFF) Switch
This switch lets you add additional comments (or music) to a tape while you are copying a tape from your camera/recorder onto another VTR.

DISASSEMBLY

1. CASE

1-1. Left Case Removal

1. Move the electronic viewfinder (EVF) in the direction of the arrow. (See Fig. 2-1)
2. Remove one (1) screw holding the left case.
3. Remove eight (8) screws and open the left case in the direction of the arrow. (See Fig. 2-2)
4. Disconnect connector CN1407 on the character generator function switch circuit board.
5. Disconnect connector CN404 on the main circuit board. (See Fig. 2-3)

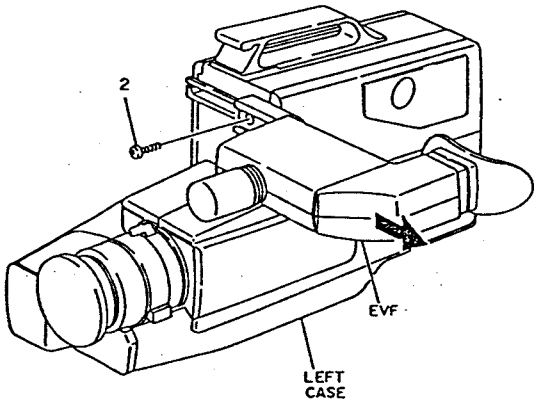


Fig. 2-1

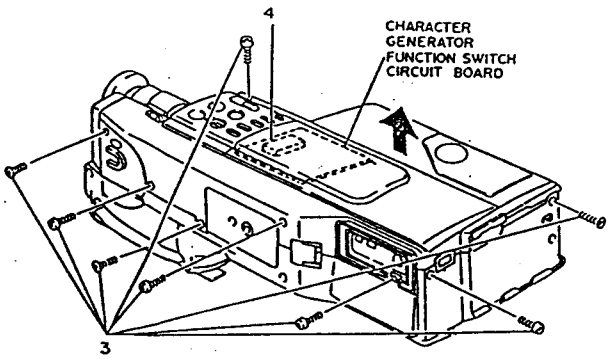


Fig. 2-2

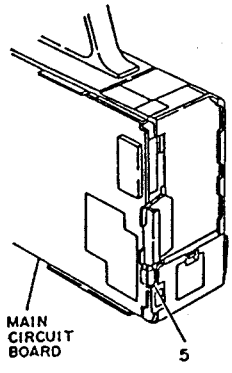


Fig. 2-3

1-2. Electronic Viewfinder (EVF) Removal

1. Remove the left case. (See Figs. 2-1, 2-2, 2-3)
2. Move the EVF in the direction of the arrow (A). (See Fig. 2-4)
3. While pulling the EVF shoe spring (1) in the direction of the arrow (B), remove the EVF in the direction of the arrow (A).
4. Release two (2) tabs and open the main circuit in the direction of the arrow. (See Fig. 2-5)
5. Disconnect connector CN401 on the main circuit board.

Note: When reinstalling the EVF, first attach the EVF shoe spring (1) to the EVF shoe.

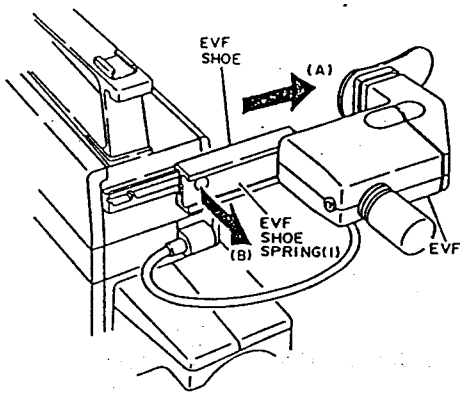


Fig. 2-4

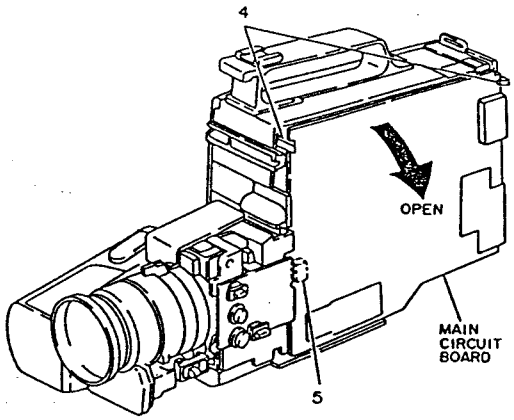


Fig. 2-5

1-3. Electronic Viewfinder (EVF) Shoe and Accessory Shoe Removal

1. Remove the left case. (See Figs. 2-1, 2-2, 2-3)
2. Remove the EVF. (See Figs. 2-4, 2-5)
3. Move the EVF shoe in the direction of the arrow (A). (See Fig. 2-6)
4. While pulling the EVF shoe spring (2) in the direction of the arrow (B), remove the EVF shoe in the direction of the arrow (A).
5. Remove one (1) screw holding the accessory shoe spring.
6. Remove the accessory shoe spring in the direction of the arrow.
7. Remove two (2) screws holding the accessory shoe.

Note: When reinstalling the EVF shoe, first attach the EVF shoe spring (2) to the EVF shoe.

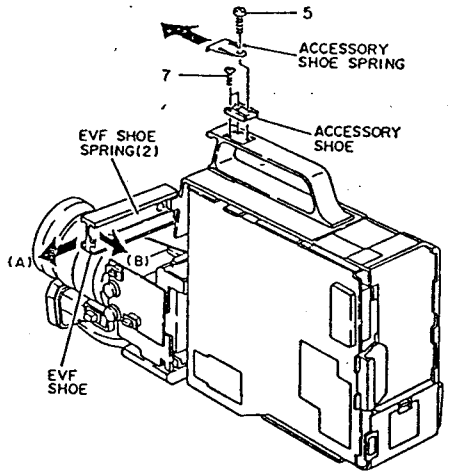


Fig. 2-6

1-4. Cassette Lid Removal
1. Remove two (2) screws holding the cassette lid. (See Fig. 2-7)
2. Remove the cassette lid in the direction of the arrow.

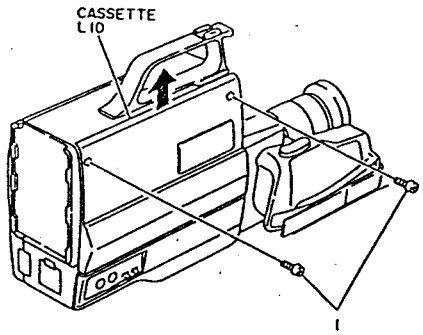


Fig. 2-7

1-5. Grip Cover Removal
1. Remove one (1) screw holding the grip cover. (See Fig. 2-8)
2. Remove the grip cover in the direction of the arrow.

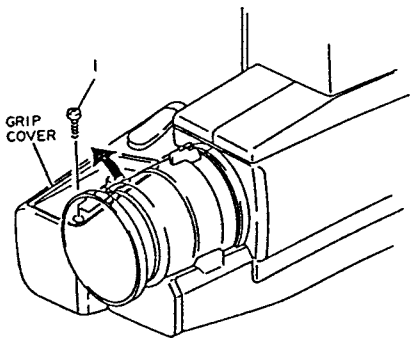


Fig. 2-8

1-6. Right Case Removal
1. Remove the left case. (See Figs. 2-1, 2-2, 2-3)
2. Remove the EVF. (See Figs. 2-4, 2-5)
3. Remove the cassette lid. (See Fig. 2-7)
4. Remove the grip cover. (See Fig. 2-8)
5. Disconnect connector CN901 on the main circuit board. (See Fig. 2-9).
6. Remove two (2) screws holding the right case.
7. Remove three (3) screws holding the right case. (See Fig. 2-10)
8. Pull the right case in the direction of the arrow.
9. Disconnect two (2) connectors (CN11, CN001) on the S-connector circuit board.

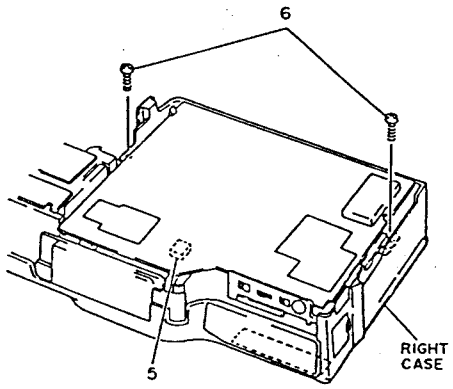


Fig. 2-9

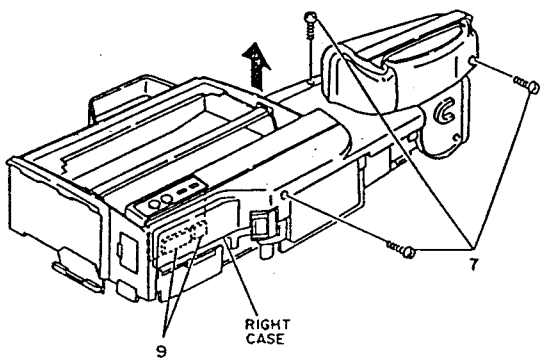


Fig. 2-10

2. CIRCUIT BOARD AND TAPE TRANSPORT MECHANISM

Remove the right case and left case as previously given.

2-1. Main Circuit Board Removal
1. Release two (2) tabs and open the main circuit board in the direction of the arrow. (See Fig. 2-11)
2. Disconnect thirteen (13) connectors (CN11, CN105, CN402, CN403, CN601, CN610, CN903, CN904, CN906, CN912, CN913C, CN1403, CN1406). (See Fig. 2-12)

3. Remove the shield cover of the luma/chroma section in the direction of the arrow.
4. Disconnect one (1) flat cable.
5. Remove one (1) screw holding two ground cables.
6. Release two (2) tabs holding the main circuit board. (See Fig. 2-11)
7. Remove one (1) screw holding the ground cable. (See Fig. 2-13)

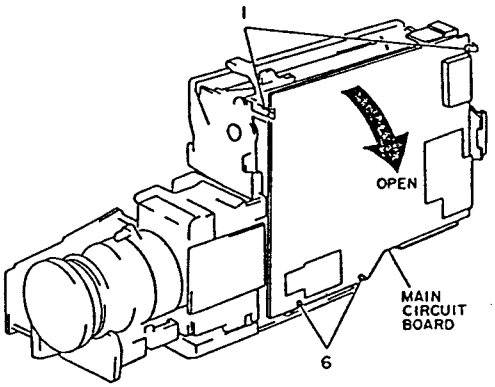


Fig. 2-11

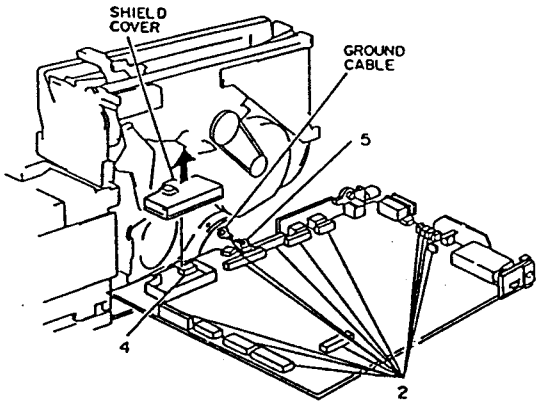


Fig. 2-12

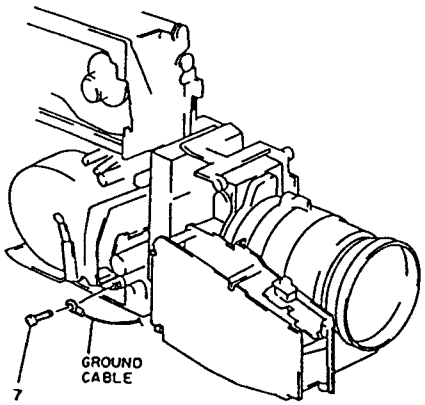


Fig. 2-13

2-2. Process Circuit Board Removal

1. Disconnect connector CN106 on the character generator control circuit board. (See Fig. 2-14)
2. Release four (4) tabs holding the process circuit board. (See Fig. 2-15)
3. Open the process circuit board in the direction of the arrow.
4. Disconnect seven (7) connectors (CN05F, CN002, CN003, CN104, CN105, CN607, CN709). (See Fig. 2-16)
5. Remove one (1) screw holding the ground cable.

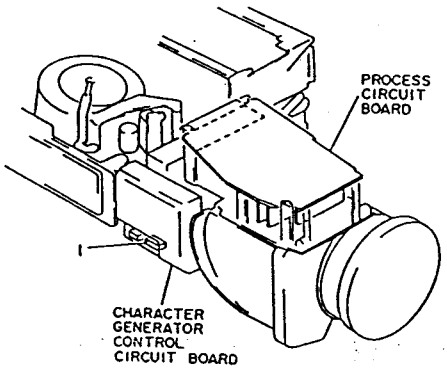


Fig. 2-14

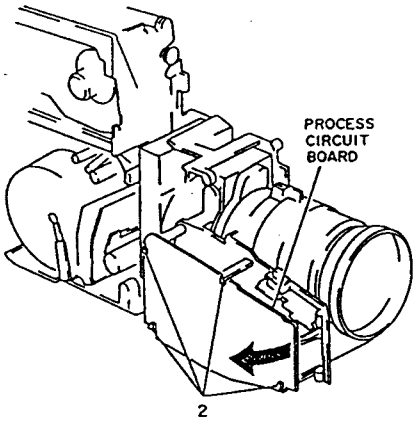


Fig. 2-15

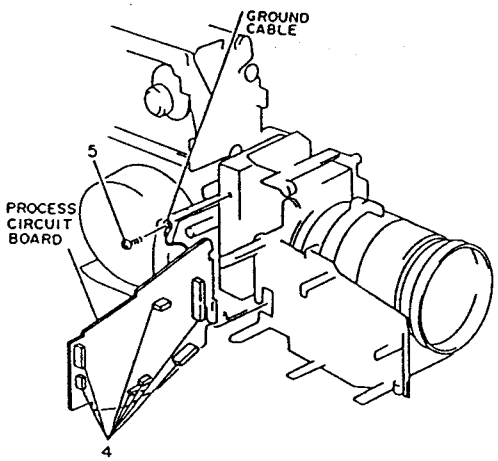


Fig. 2-16

2-3. Zoom Speed Switch Circuit Board Removal

1. Open the process circuit board. (See Fig. 2-15)
2. Disconnect connector CN709 on the process circuit board. (See Fig. 2-17)
3. Release one (1) tab holding the zoom speed switch circuit board.

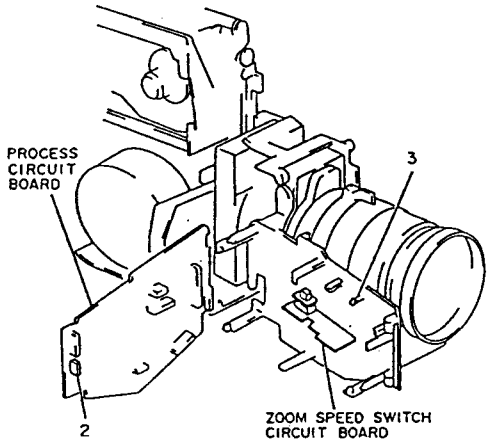


Fig. 2-17

2-4. Control and Self Timer Switch Circuit Boards Removal

1. Open the main circuit board. (See Fig. 2-11)
2. Disconnect connector CN610. (See Fig. 2-18)
3. Disconnect three (3) connectors (CN001, CN602, CN607).
4. Release three (3) tabs holding the control circuit board.
5. Unsolder two (2) points on the control circuit board. (See Fig. 2-19)

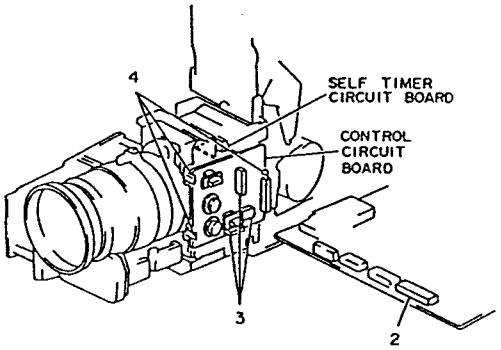


Fig. 2-18

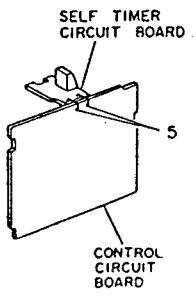


Fig. 2-19

2-5. Control Switch Circuit Board Removal

1. Disconnect connector CN602 on the control circuit board. (See Fig. 2-20)
2. Release one (1) tab holding the control switch circuit board.

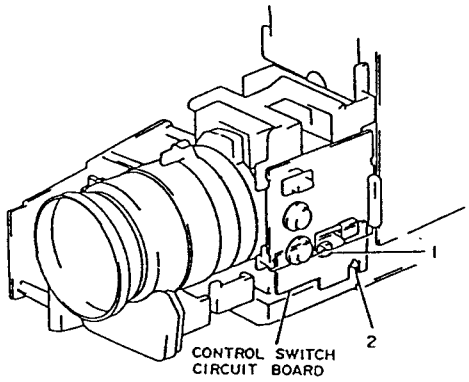


Fig. 2-20

2-6. Character Generator Control Circuit Board Removal

1. Open the main circuit board. (See Fig. 2-11)
2. Disconnect two (2) connectors (CN1403, CN1406) on the main circuit board. (See Fig. 2-21)
3. Disconnect connector CN106 on the character generator control circuit board. (See Fig. 2-22)
4. Release one (1) tab holding the character generator control circuit board.

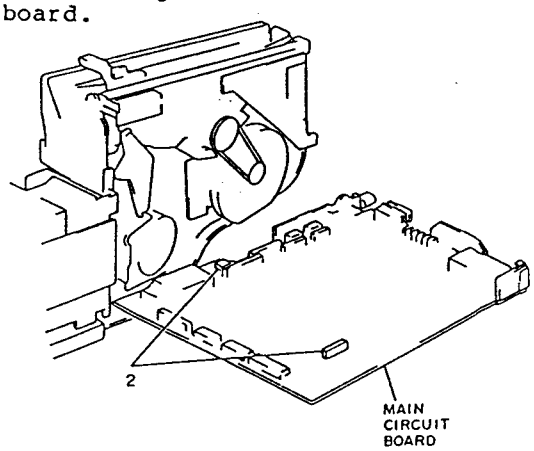


Fig. 2-21

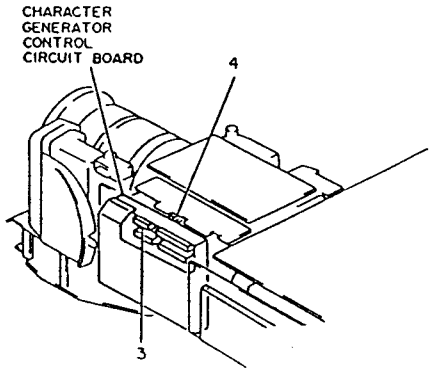


Fig. 2-22

2-7. Character Generator Function Switch Circuit Board Removal

1. Remove two (2) screws holding the character generator function switch circuit board. (See Fig. 2-23)
2. Release three (3) tabs holding the character generator function switch circuit board.

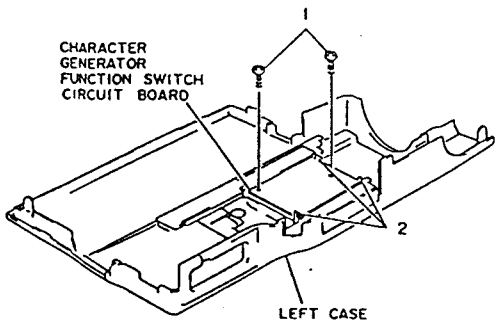


Fig. 2-23

2-8. Back-up and S-Connector Circuit Boards Removal (Fig. 2-24)

1. Open the back-up battery cover and remove the back-up battery cover in the direction of the arrow (A). (See Fig. 2-24)
2. Remove one (1) screw and pull out the back-up circuit board in the direction of the arrow (B).
3. Remove (2) screws and pull out the S-connector circuit board in the direction of the arrow (C).

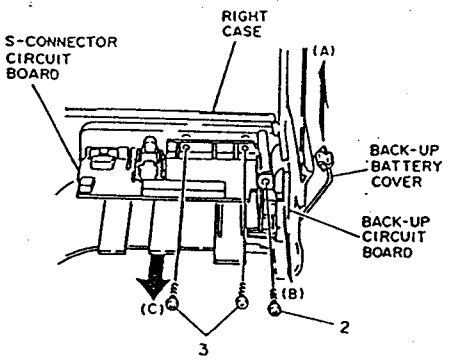


Fig. 2-24

2-9. Sensor Circuit Board Removal

1. Open the main circuit board. (See Fig. 2-11)
2. Open the process circuit board. (See Fig. 2-15)
3. Disconnect four (4) connectors (CN105, CN601, CN1403, CN1406) on the main circuit board. (See Fig. 2-25)
4. Disconnect connector CN001 on the control circuit board.
5. Remove one (1) screw holding the camera section and VTR section. (See Fig. 2-26)
6. Disconnect two (2) connectors (CN002, CN003) on the process circuit board. (See Fig. 2-27)
7. Remove one (1) screw holding the ground cable and sensor shield cover. (See Fig. 2-28)
8. Remove the sensor shield cover.
9. Remove two (2) screws holding the sensor circuit board.

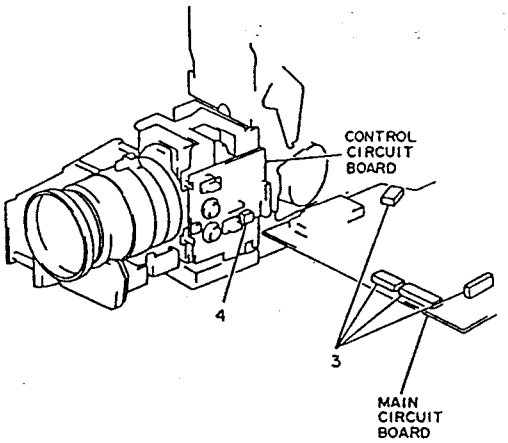


Fig. 2-25

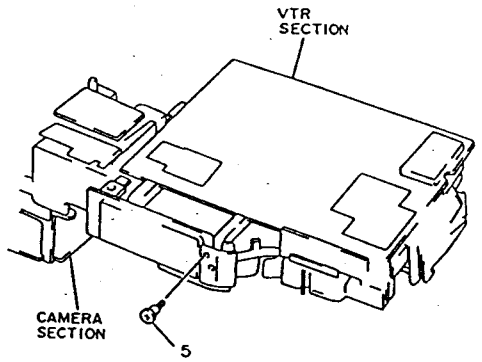


Fig. 2-26

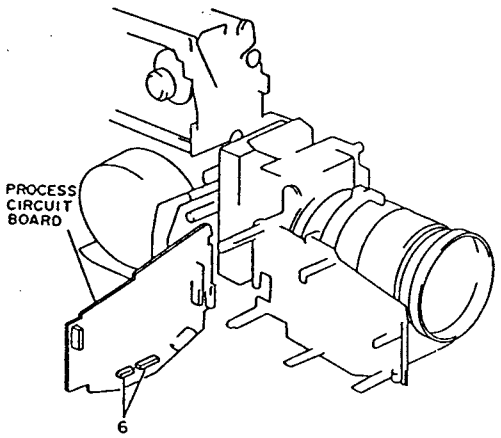


Fig. 2-27

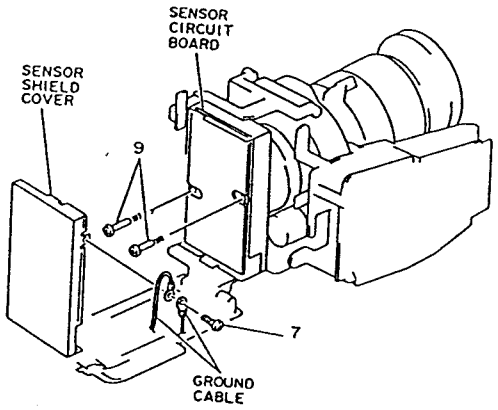


Fig. 2-28

2-10. Tape Transport Mechanism Removal

1. Remove the main circuit board. (See Figs. 2-11, 2-12, 2-13)
2. Remove one (1) screw holding the camera section and VTR section. (See Fig. 2-29)

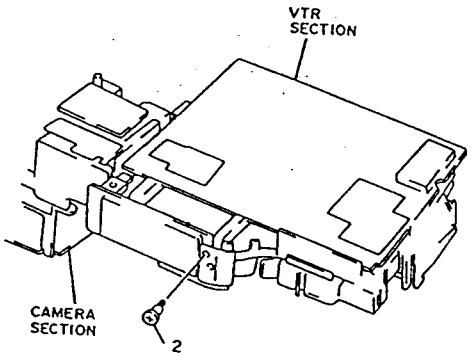


Fig. 2-29

TAPE TRANSPORT MECHANISM IDENTIFICATION - TOP VIEW

1. Static Discharge Brush
2. Upper Cylinder (Video Head)
3. Guide Roller Rail
4. X-Value Adjust Nut
5. Take-up Guide Roller
6. Audio/Control (A/C) Head
7. Take-up Guide Pole
8. Pressure Guide Arm
9. Pressure Roller Assembly
10. Take-up Guide Arm
11. Take-up End Sensor
12. End Lamp
13. Take-up Reel Table
14. Cassette Holder Lock Slider
15. Reel Gear Block
16. Supply Reel Table
17. Tension Band
18. Tension Arm
19. Supply Guide Roller
20. Supply End Sensor
21. Supply Guide Post
22. Supply Guide Pole
23. Full Erase (FE) Head
24. Impedance Roller

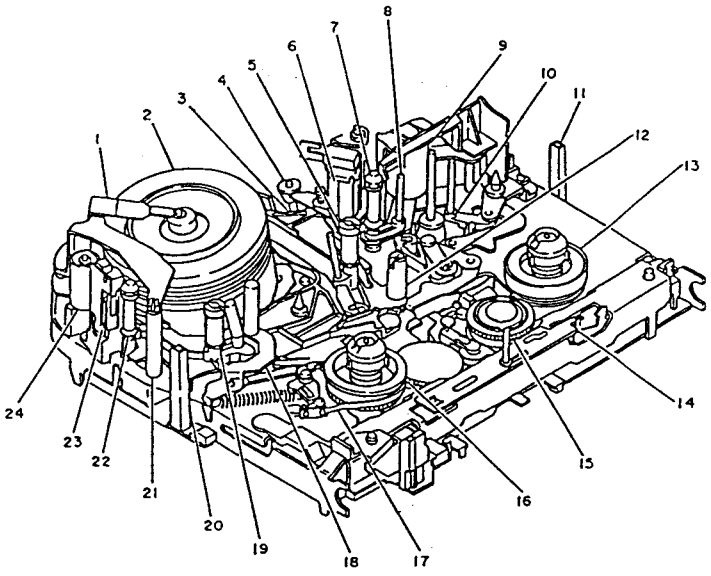


Fig. 2-30

TAPE TRANSPORT MECHANISM IDENTIFICATION - BOTTOM VIEW

1. Lower Cylinder (Cylinder Motor Assembly)
2. Supply Loading Cam Gear
3. Cam Gear Plate
4. Mechanism State Switch
5. Tension Pole Drive Arm
6. Loading Motor
7. Supply Sensor Circuit Board
8. Loading Gear
9. Driving Gear
10. Take-up Sensor Circuit Board
11. Capstan Motor
12. Take-up Loading Cam Gear

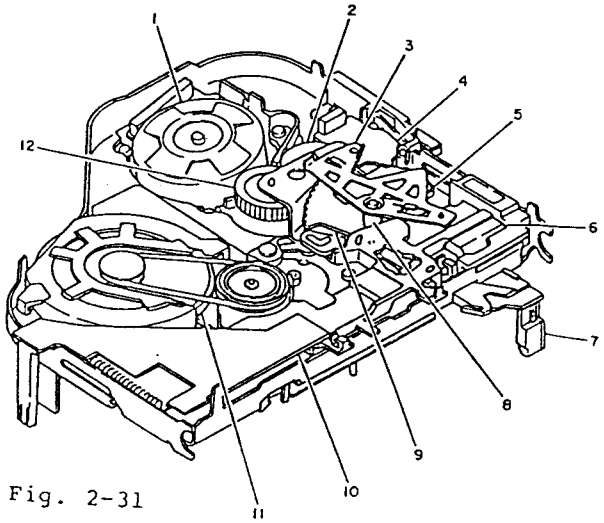


Fig. 2-31

3. TAPE TRANSPORT MECHANISM PARTS

Remove the tape transport mechanism as previously given.

3-1. Cassette Holder and Supply Sensor Circuit Board Removal

1. Disconnect connector CN903. (See Fig. 2-32)
2. Remove one (1) screw holding the supply sensor circuit board.
3. Release one (1) tab and lift up the cassette holder. (See Fig. 2-33)
4. Remove the supply sensor circuit board in the direction of the arrow. (See Fig. 2-32)
5. Remove two (2) screws holding the cassette holder and cassette holder spring. (See Fig. 2-34)
6. Remove one (1) screw holding the cassette holder and chassis holder. (See Fig. 2-35)
7. Move the front arm of the cassette holder in the direction of the arrow (A). (See Figs. 2-34, 2-35)
8. Move the rear arm of the cassette holder in the direction of the arrow (B).

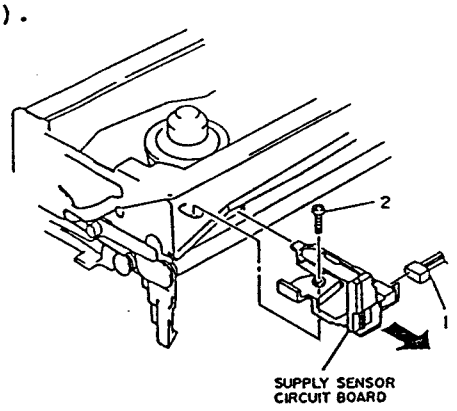


Fig. 2-32

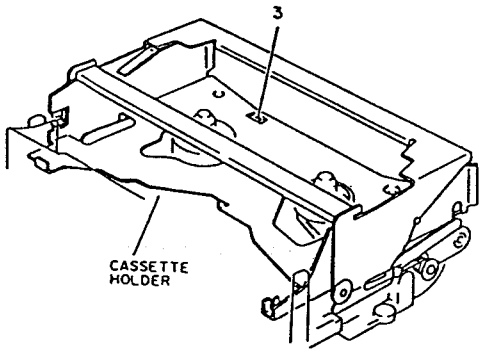


Fig. 2-33

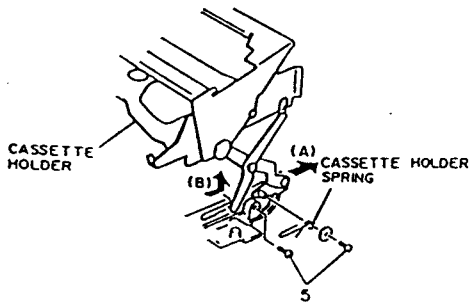


Fig. 2-34

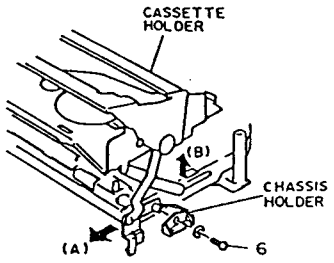


Fig. 2-35

3-2. Upper Cylinder (Video Head) Removal

1. Remove one (1) screw holding the static discharge brush and cylinder shield. (See Fig. 2-36)
2. Remove two (2) screws holding the upper cylinder and pull out the upper cylinder from the lower cylinder.

Note: Be careful that your fingers or tools do not touch the video head tips during work.

Upon reinstallation, align the video heads connected to the connector (blue) of the upper cylinder with the arrow mark on the lower cylinder. (See Fig. 2-37)

Install the upper cylinder by the reverse procedure to removal.

Tighten two (2) upper cylinder holding screws alternately.

Adjust as follows after installing the cylinder assembly.

* Audio/Control Head (X-Value) Adjustment
* Adjustment After Replacing the Cylinder
* Tracking Preset Adjustment
* Head Switching Point Adjustment
* Record Luma/Chroma Level Adjustment

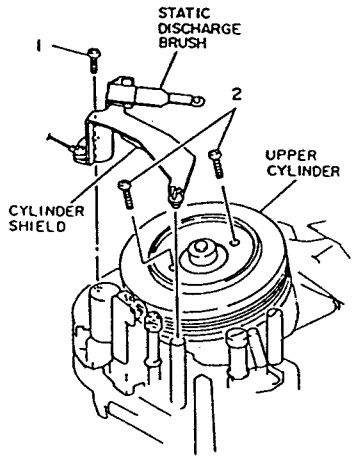


Fig. 2-36

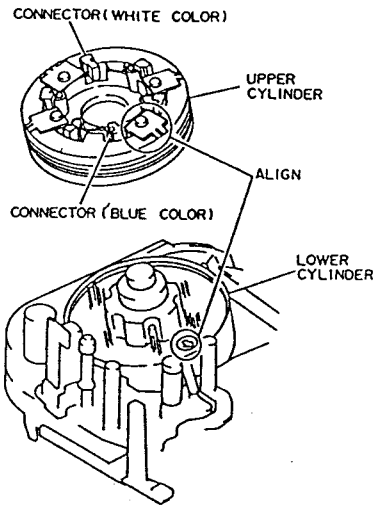


Fig. 2-37

3-3. Audio/Control (A/C) Head Removal
1. Disconnect connector CN402. (See Fig. 2-38)
2. Remove two (2) screws holding the A/C head.

Note: Adjust as follows after installing the Audio/Control Head.
* Audio/Control Head Adjustment
* Adjustment After Replacing the Cylinder
* Audio Playback Gain Adjustment
* Audio Bias Level Adjustment

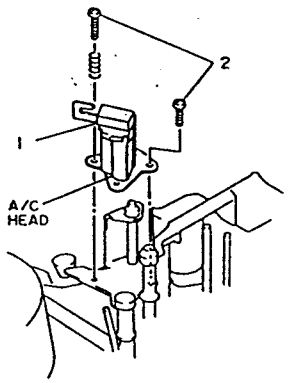


Fig. 2-38

3-4. Full Erase (FE) Head Removal
1. Disconnect connector CN403. (See Fig. 2-39)
2. Remove one (1) screw holding the FE head base.
3. Release two (2) tabs holding the FE head and remove the FE head in the direction of the arrow.

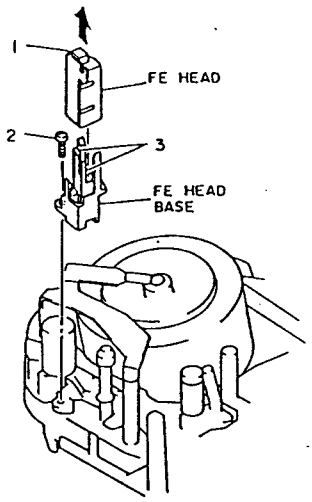


Fig. 2-39

3-5. Dew Sensor Removal
1. Release one (1) tab holding the dew sensor. (See Fig. 2-40)
2. Remove the dew sensor in the direction of the arrow from the pressure roller holder.

Note: This unit will not operate for approx. 30 minutes after the dew sensor detects condensation. If the dew sensor is activated by mistake during adjustment and servicing, release by the following procedure.
1. Set the OPERATE switch to the ON position.
2. Set the CAM./VIDEO switch to the VIDEO position.
3. Press the clock setting SHIFT or SET button.

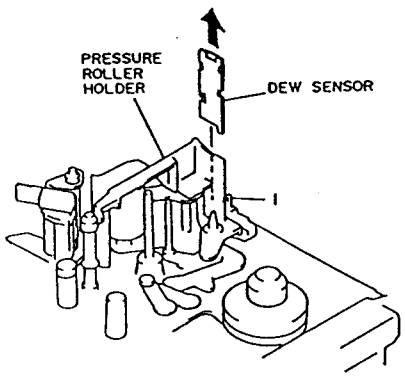


Fig. 2-40

3-6. Supply End Sensor and Mechanism State Switch Removal
1. Disconnect connector CN903 on the supply end sensor. (Fig. 2-41)
2. Disconnect connector CN903 on the mechanism state switch.
3. Release two (2) tabs of the supply end sensor.
4. Remove the supply end sensor.

5 Remove one (1) screw holding the mechanism state switch.
6. Remove the mechanism state switch.

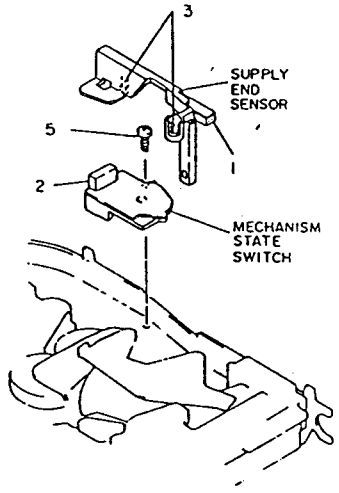


Fig. 2-41

3-7. Take-up Sensor Circuit Board (Take-up Reel Sensor/Take-up End Sensor/Cassette Holder Switch) Removal
1. Remove two (2) screws holding the take-up sensor circuit board. (See Fig. 2-42)
2. Release three (3) tabs and open the take-up sensor circuit board.
3. Disconnect two (2) connectors (CN001, CN004) on the take-up sensor circuit board. (See Fig. 2-43)

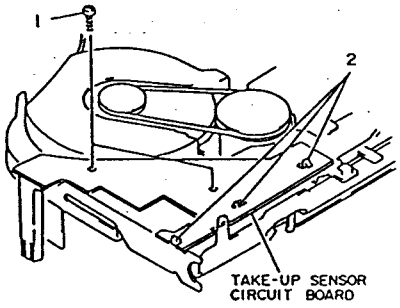


Fig. 2-42

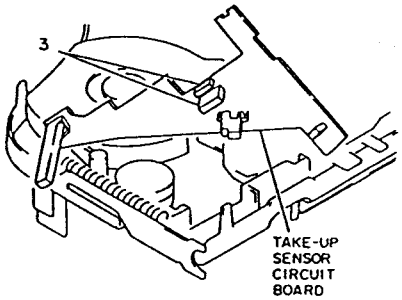


Fig. 2-43

3-8. Lower Cylinder (Cylinder Motor Assembly) Removal
1. Remove the upper cylinder. (See Fig. 2-36)
2. Remove three (3) screws holding the lower cylinder. (See Fig. 2-44)

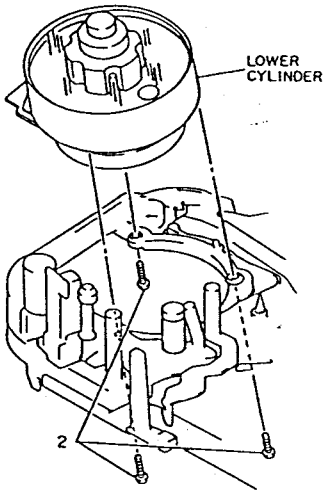


Fig. 2-44

3-9. Capstan Motor Removal
1. Move the take-up guide arm in the direction of the arrow (pressure roller side). (See Fig. 2-45)
2. Remove three (3) screws holding the capstan motor.
3. Disconnect connector CN913C on the capstan motor.
4. Remove the capstan belt from the capstan motor.
5. Release three (3) tabs and remove the capstan motor cover. (See Fig. 2-46)

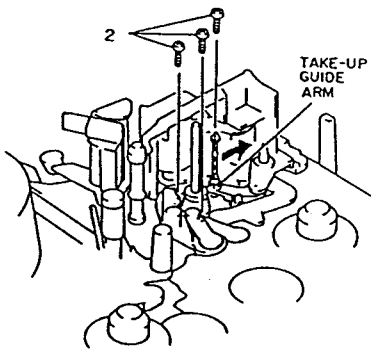


Fig. 2-45

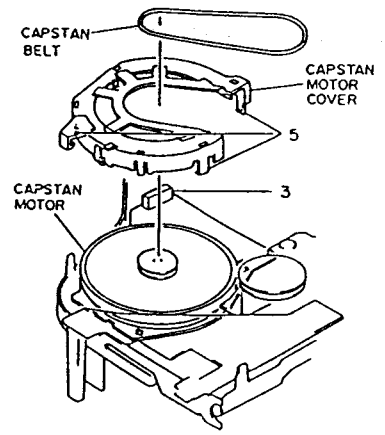


Fig. 2-46

3-10. Impedance Roller Removal

1. Remove one (1) washer and pull out the impedance roller. (See Fig. 2-47)

Note: Be careful that your fingers do not touch the roller during work.

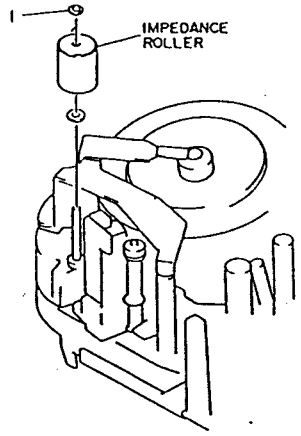


Fig. 2-47

3-11. Take-up Guide Pole, Pressure Guide Arm and Pressure Roller Assembly Removal

1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove the dew sensor. (See Fig. 2-40)
3. Turn the upper section of the take-up guide pole using the hexagonal box wrench (6.0mm) to remove the take-up guide pole. (See Fig. 2-48)
4. Pull out the pressure guide arm from the chassis.
5. Remove two (2) screws holding the pressure roller holder. (See Fig. 2-49)
6. Pull out the pressure roller assembly from the chassis.

Note: Adjust as follows after installing the take-up guide pole.
* Supply/Take-up Guide Poles Height Adjustments.

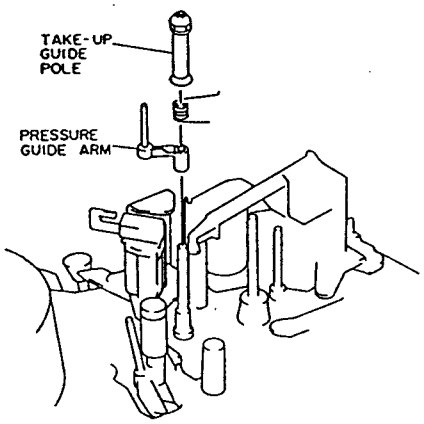


Fig. 2-48

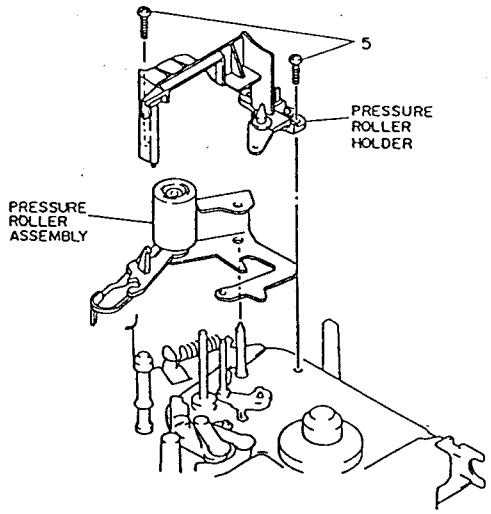


Fig. 2-49

3-12. Tension Arm and Tension Band Removal

1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Release one (1) tab of the supply end sensor. (See Fig. 2-50)
3. Release the tension spring.
4. Remove one (1) screw holding the tension band.
5. Move the supply sub brake in the direction of the arrow.
6. Remove the tension arm and tension band.
7. Release one (1) tab and remove the tension band from the tension arm.

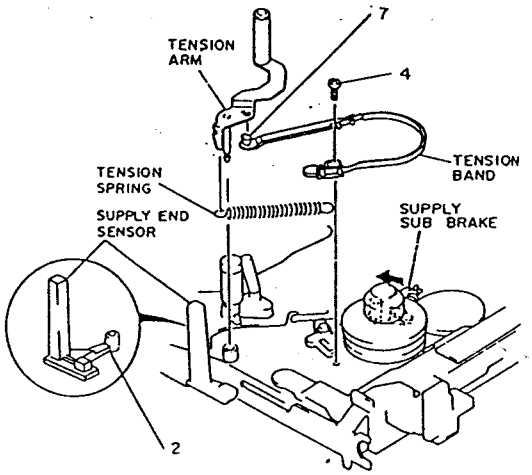


Fig. 2-50

3-13. Supply Reel Table Removal

1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove the tension arm and tension band. (See Fig. 2-50)
3. Remove one (1) washer holding the supply reel table. (See Fig. 2-51)
4. Move the supply sub brake in the direction of the arrow.

5. Pull out the supply reel table from the chassis.

Note: Take case not to lose the washer in the lower section.
Adjust as follows after installing the supply reel table.
* Reel Table Height Adjustment

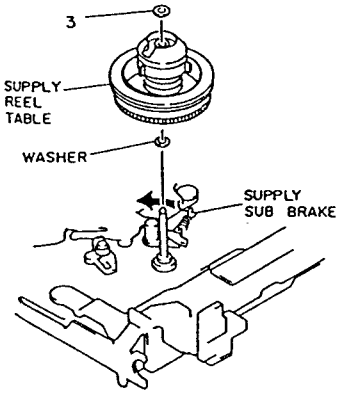


Fig. 2-51

3-14. Take-up Reel Table Removal
1. Remove the cassette holder and supply sensor circuit board.
(See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove one (1) washer holding the take-up reel table. (See Fig. 2-52)
3. Pull out the take-up reel table from the chassis.

Note: Take case not to lose the washer in the lower section.
Adjust as follows after installing the take-up reel table.
* Reel Table Height Adjustment

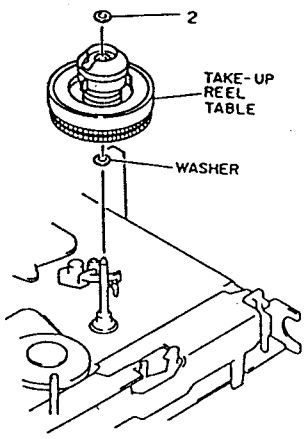


Fig. 2-52

3-15. Take-up Sub Brake Removal
1. Remove the cassette holder and supply sensor circuit board.
(See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove one (1) washer holding the take-up sub brake. (See Fig. 2-53)
3. Pull out the take-up sub brake from the chassis.

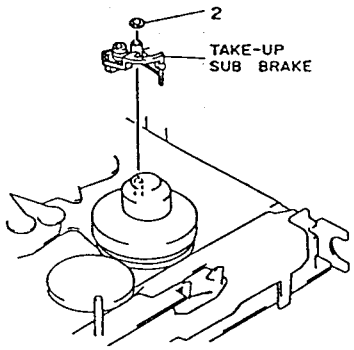


Fig. 2-53

3-16. Supply Guide Pole Removal
1. Turn the upper section of the supply guide pole using the hexagonal box wrench (6.0mm) to remove the supply guide pole. (See Fig. 2-54)

Note: Adjust as follows after installing the supply guide pole.
* Supply/Take-up Guide Poles Height Adjustments

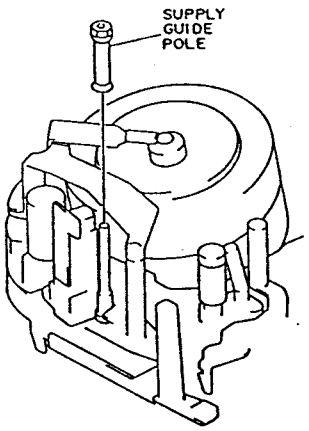


Fig. 2-54

3-17. Supply Guide Roller Removal
1. Remove one (1) hex screw holding the supply guide roller. (See Fig. 2-55)
2. Turn the upper section of the supply guide roller using a flat-head driver to remove the supply guide roller from the supply guide roller base.

Note: Adjust as follows after installing the supply guide roller.
* Supply/Take-up Guide Rollers Height Adjustments

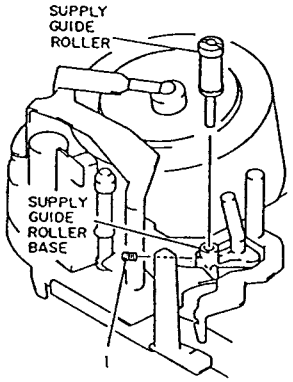


Fig. 2-55

3-18. Take-up Guide Roller Removal
1. Remove one (1) hex screw holding the take-up guide roller. (See Fig. 2-56)
2. Turn the upper section of the take-up guide roller using a flat-head driver to remove the take-up guide roller from the take-up guide roller base.

Note: Adjust as follows after installing the take-up guide roller.
* Supply/Take-up Guide Rollers Height Adjustments

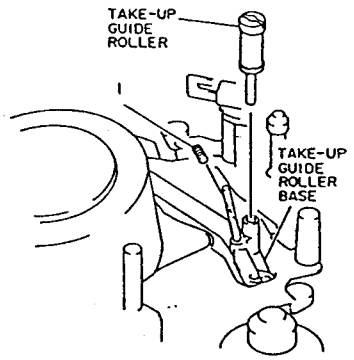


Fig. 2-56

3-19. A/C Head Base Removal
1. Remove the A/C Head. (See Fig. 2-38)
2. Remove one (1) nut holding the A/C head base. (See Fig. 2-57)
3. Pull out the A/C head base together with the spring.

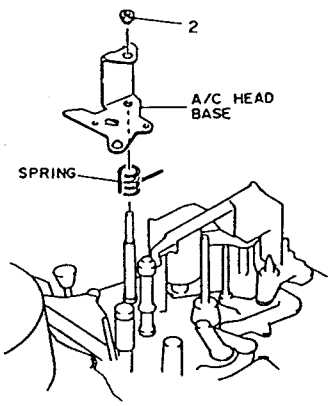


Fig. 2-57

3-20. Supply Guide Roller Base, Take-up Guide Roller Base, Guide Roller Rail and End Lamp Removal
1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove the A/C Head. (See Fig. 2-38)
3. Remove the FE Head. (See Fig. 2-39)
4. Remove the impedance roller. (See Fig. 2-47)
5. Remove the tension arm and tension band. (See Fig. 2-50)
6. Remove the supply guide roller. (See Fig. 2-55)
7. Remove the take-up guide roller. (See Fig. 2-56)
8. Remove the A/C head base. (See Fig. 2-57)
9. Remove one (1) screw holding the static discharge brush and cylinder shield. (See Fig. 2-58)
10. Remove three (3) screws holding the cylinder assembly. (See Fig. 2-59)
11. Remove three (3) screws holding the guide roller rail. (See Fig. 2-58)
12. Release eight (8) tabs and remove the guide roller rail together with the supply guide roller base, take-up guide roller base and end lamp.
13. Remove the end lamp in the direction of the arrow from the guide roller rail.

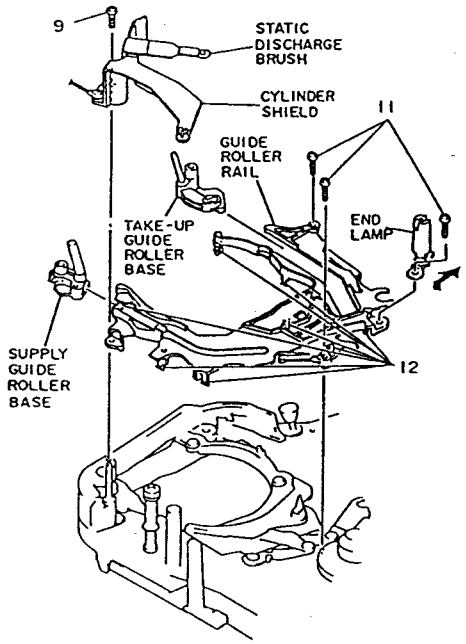


Fig. 2-58

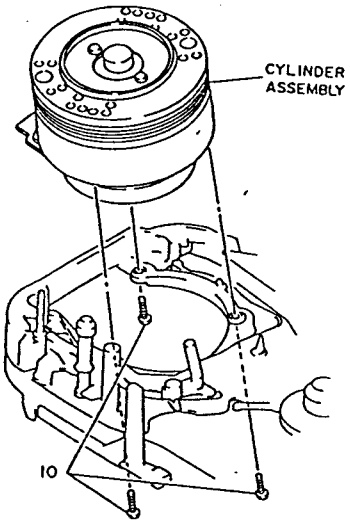


Fig. 2-59

3-21. Supply Sub Brake Removal

1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove the A/C Head. (See Fig. 2-38)
3. Remove the FE Head. (See Fig. 2-39)
4. Remove the impedance roller. (See Fig. 2-47)
5. Remove the tension arm and tension band. (See Fig. 2-50)
6. Remove the supply guide roller. (See Fig. 2-55)
7. Remove the take-up guide roller. (See Fig. 2-56)
8. Remove the A/C head base. (See Fig. 2-57)
9. Remove the supply guide roller base, take-up guide roller base, guide roller rail and end lamp. (See Figs. 2-58, 2-59)
10. Release the spring between the supply sub brake and chassis. (See Fig. 2-60)
11. Pull out the supply sub brake from the chassis.

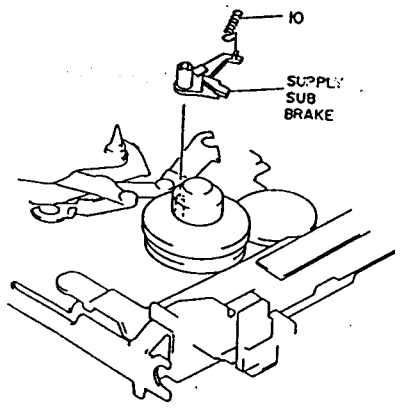


Fig. 2-60

3-22. Cylinder Base Removal

1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove the A/C Head. (See Fig. 2-38)
3. Remove the FE Head. (See Fig. 2-39)
4. Remove the impedance roller. (See Fig. 2-47)
5. Remove the tension arm and tension band. (See Fig. 2-50)
6. Remove the supply guide roller. (See Fig. 2-55)
7. Remove the take-up guide roller. (See Fig. 2-56)
8. Remove the A/C head base. (See Fig. 2-57)
9. Remove the supply guide roller base, take-up guide roller base, guide roller rail and end lamp. (See Figs. 2-58, 2-59)
10. Remove three (3) screws holding the cylinder base. (See Fig. 2-61)

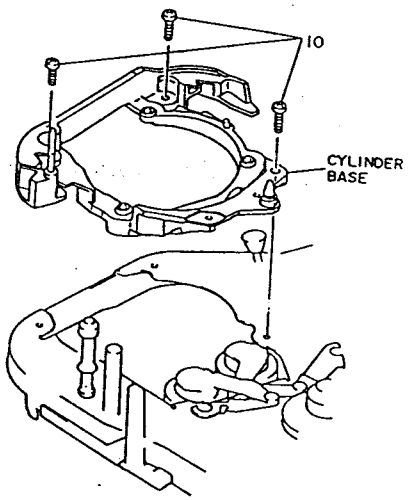


Fig. 2-61

3-23. Supply Loading Cam Gear and Take-up Loading Cam Gear Removal

1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove the A/C Head. (See Fig. 2-38)
3. Remove the FE Head. (See Fig. 2-39)
4. Remove the impedance roller. (See Fig. 2-47)
5. Remove the tension arm and tension band. (See Fig. 2-50)
6. Remove the supply guide roller. (See Fig. 2-55)
7. Remove the take-up guide roller. (See Fig. 2-56)
8. Remove the A/C head base. (See Fig. 2-57)
9. Remove the supply guide roller base, take-up guide roller base, guide roller rail and end lamp. (See Figs. 2-58, 2-59)
10. Remove the cylinder base. (See Fig. 2-61)
11. Remove the supply loading cam gear and take-up loading cam gear. (See Fig. 2-62)

Note: Adjust as follows after installing the supply and take-up loading cam gears.
* Loading Cam Gear (Supply/Take-up) Adjustment

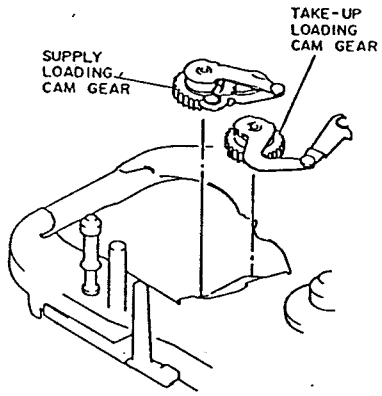


Fig. 2-62

3-24. Take-up Guide Arm Removal
1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove the dew sensor. (See Fig. 2-40)
3. Remove the take-up guide pole, pressure guide arm and pressure roller assembly. (See Fig. 2-48, 2-49)
4. Release the spring between the take-up guide arm and chassis. (See Fig. 2-63)
5 Pull out the take-up guide arm from the chassis.

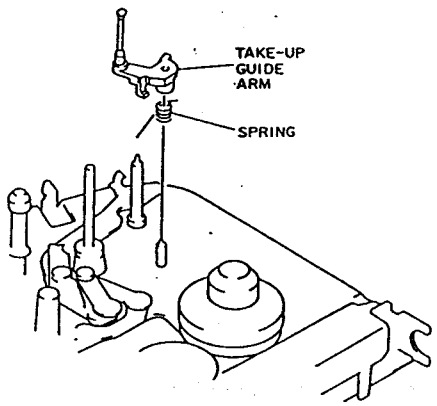


Fig. 2-63

3-25. Pressure Roller Control Arm Removal
1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove the dew sensor. (See Fig. 2-40)
3. Remove the take-up guide pole, pressure guide arm and pressure roller assembly. (See Fig. 2-48, 2-49)
4. Release the spring between the pressure roller control arm and chassis. (See Fig. 2-64)
5. Release one (1) tab and pull out the pressure roller control arm from the chassis.

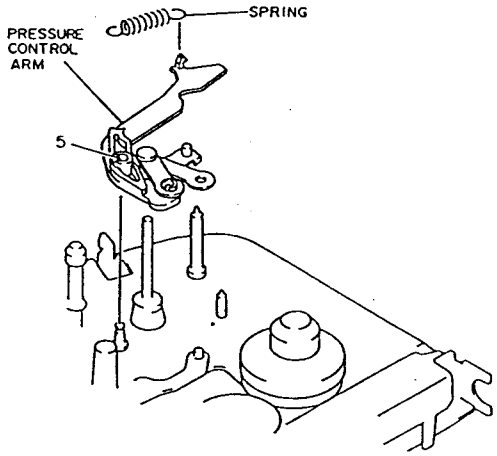


Fig. 2-64

3-26. Cassette Holder Lock Slider Removal
1. Remove the cassette holder and supply sensor circuit board. (See Figs. 2-32, 2-33, 2-34, 2-35)
2. Remove one (1) washer and release one (1) tab holding the cassette holder lock slider. (See Fig. 2-65)

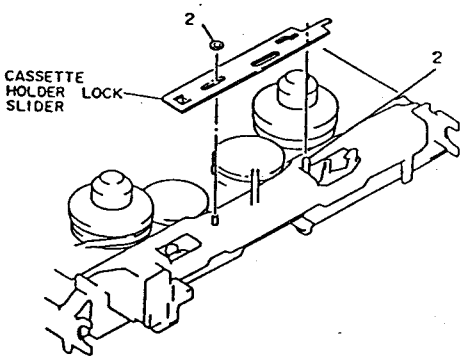


Fig. 2-65

3-27. Reel Gear Block and Loading Motor Removal
1. Remove the take-up sensor circuit board. (See Figs. 2-42, 2-43)
2. Remove the capstan belt from the reel gear block. (See Fig. 2-66)
3. Remove one (1) screw holding the cam gear plate.
4. Remove three (3) screws holding the reel gear block.
5. Release three (3) tabs holding the loading motor. (See Fig. 2-67)

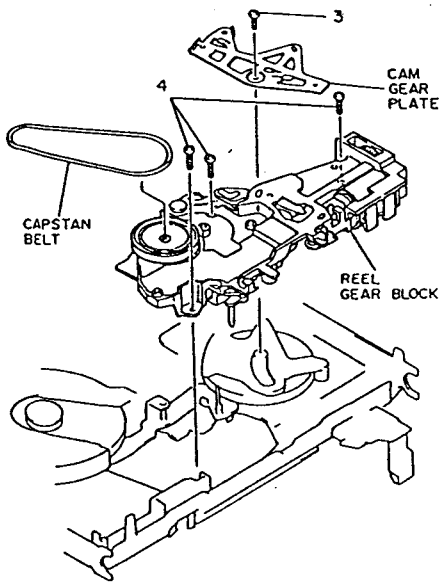


Fig. 2-66

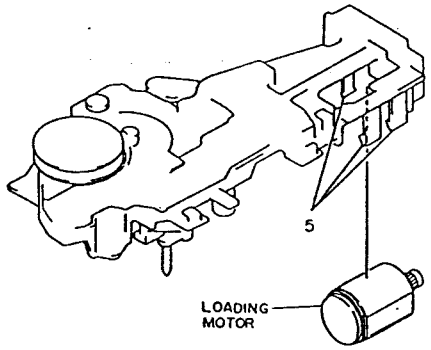


Fig. 2-67

3-28. Loading Gear Removal
1. Remove the take-up sensor circuit board. (See Figs. 2-42, 2-43)
2. Remove the reel gear block. (See Fig. 2-66)
3. Pull out the loading gear from the chassis. (See Fig. 2-68)

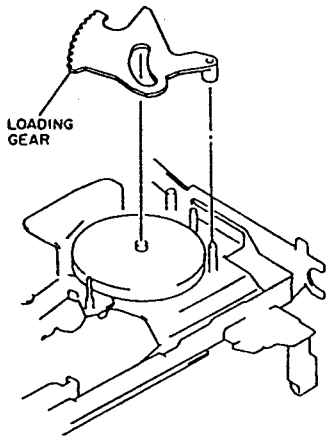


Fig. 2-68

3-29. Tension Pole Drive Arm Removal
1. Remove the cam gear plate (See Fig. 2-66)
2. Pull out the tension pole drive arm from the chassis. (See Fig. 2-69)

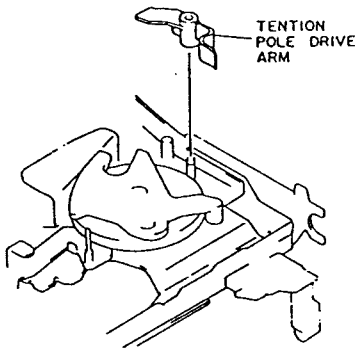


Fig. 2-69

3-30. Driving Gear Removal
1. Remove the take-up sensor circuit board. (See Figs. 2-42, 2-43)
2. Remove the reel gear block. (See Fig. 2-66)
3. Remove the loading gear. (See Fig. 2-68)
4. Remove the tension pole drive arm. (See Fig. 2-69)
5. Pull out the driving gear from the chassis. (See Fig. 2-70)

Note: Adjust as follows after installing the driving gear.
* Mechanism State Switch and Driving Gear Adjustment.

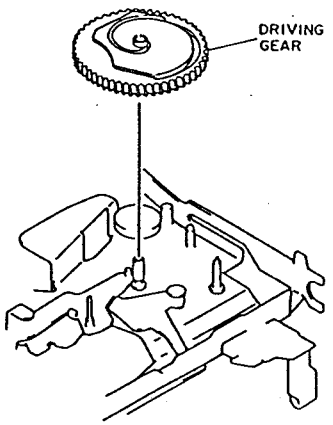


Fig. 2-70

3-31. Relay Gear Removal
1. Remove the mechanism state switch. (See Fig. 2-41)
2. Remove the take-up sensor circuit board. (See Figs. 2-42, 2-43)
3. Remove the reel gear block. (See Fig. 2-66)
4. Remove the loading gear. (See Fig. 2-68)
5. Remove the tension pole drive arm. (See Fig. 2-69)
6. Remove the driving gear. (See Fig. 2-70)
7. Pull out the relay gear from the chassis. (See Fig. 2-71)

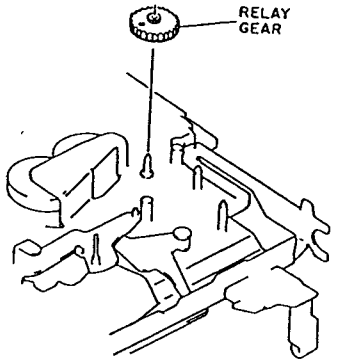


Fig. 2-71

3-32. Cassette Holder Lock Removal
1. Remove the take-up sensor circuit board. (See Figs. 2-42, 2-43)
2. Remove the reel gear block. (See Fig. 2-66)
3. Remove one (1) screw holding the cassette holder lock. (See Fig. 2-72)
4. Release one (1) tab and remove the cassette holder lock.

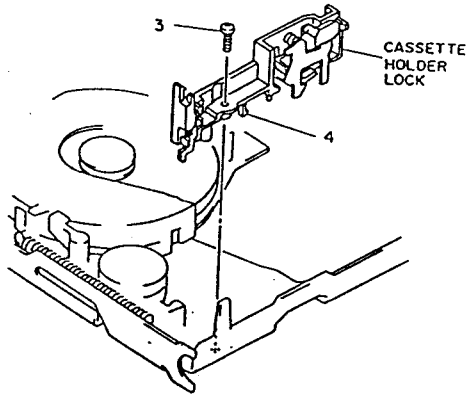


Fig. 2-72

3-33. Cassette Holder Damper Removal
1. Remove the take-up sensor circuit board. (See Figs. 2-42, 2-43)
2. Remove the reel gear block. (See Fig. 2-66)
3. Remove the cassette holder lock. (See Fig. 2-72)
4. Remove the cassette holder damper in the direction of the arrow. (See Fig. 2-73)

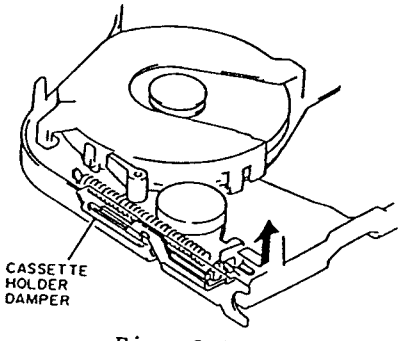


Fig. 2-73

3-34. Cam Gear Arm Removal
1. Remove the take-up sensor circuit board. (See Figs. 2-42, 2-43)
2. Remove the capstan motor. (See Figs. 2-45, 2-46)
3. Remove the reel gear block. (See Fig. 2-66)
4. Remove the loading gear. (See Fig. 2-68)
5. Remove the tension pole drive arm. (See Fig. 2-69)
6. Remove the driving gear. (See Fig. 2-70)
7. Move the cam gear arm in the direction of the arrow. (See Fig. 2-74)
8. Pull out the cam gear arm from the chassis.

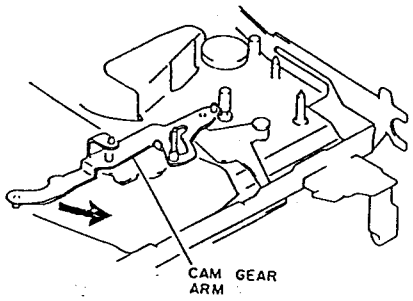


Fig. 2-74

3-35. Cassette Holder Lock Drive Arm Removal
1. Remove the take-up sensor circuit board. (See Figs. 2-42, 2-43)
2. Remove the reel gear block. (See Fig. 2-66)
3. Remove the loading gear. (See Fig. 2-68)
4. Remove the tension pole drive arm. (See Fig. 2-69)
5. Remove the driving gear. (See Fig. 2-70)
6. Remove the cam gear arm. (See Fig. 2-74)
7. Release the spring between the cassette holder lock drive arm and chassis. (See Fig. 2-75)
8. Pull out the cassette holder lock drive arm from the chassis.

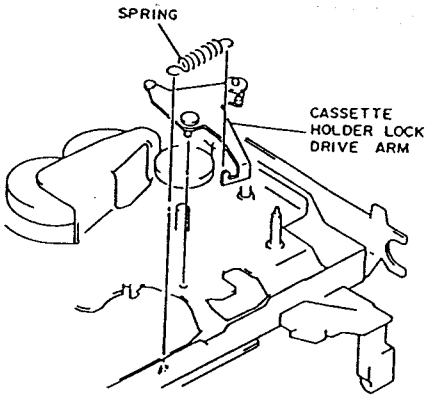


Fig. 2-75

4. LENS BLOCK

Remove the all covers as previously given.

4-1. Lens Block Removal

1. Remove the process circuit board. (See Figs. 2-14, 2-15, 2-16)
2. Remove the control and self timer switch circuit board. (See Figs. 2-18, 2-19)
3. Remove the control switch circuit board. (See Fig. 2-20)
4. Remove the character generator control circuit board. (See Figs. 2-21, 2-22)
5. Remove the sensor circuit board. (See Figs. 2-25, 2-26, 2-27, 2-28)
6. Remove three (3) screws holding the process circuit board holder and auto focus window. (See Fig. 2-76)
7. Remove four (4) screws holding the control circuit board holder. (See Fig. 2-77)
8. Remove two (2) screws holding the sensor shield case. (See Fig. 2-78)

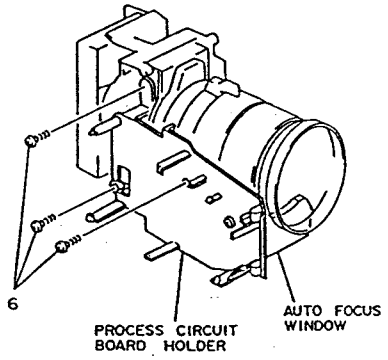


Fig. 2-76

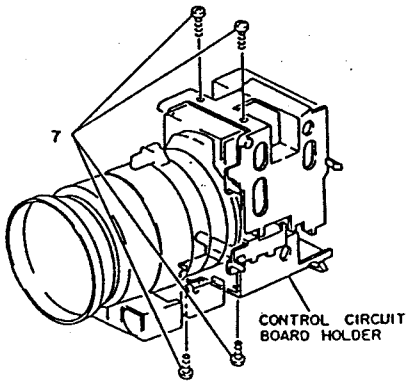


Fig. 2-77

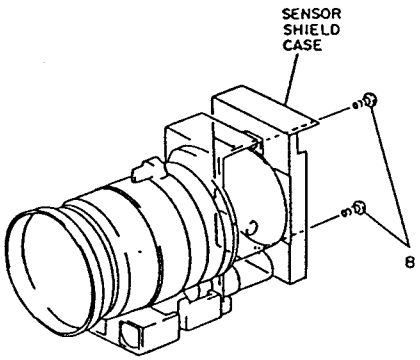


Fig. 2-78

4-2. Auto Focus Circuit Board Removal

1. Remove the lens block. (See Figs. 2-76, 2-77, 2-78)
2. Unsolder two (2) connectors (CN01F, CN02F). (See Fig. 2-79)
3. Remove one (1) screw and open the auto focus circuit board.
4. Disconnect four (4) connectors (CN11F, CN12F, CN13F, CN14F). (See Fig. 2-80)

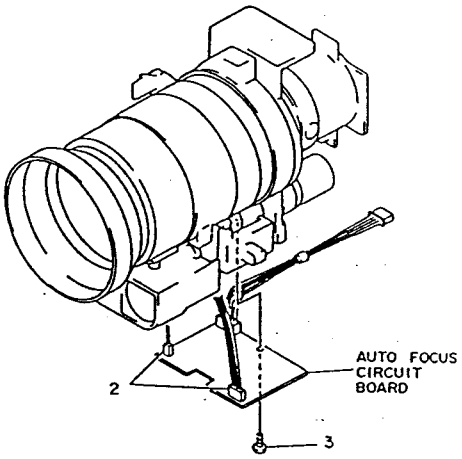


Fig. 2-79

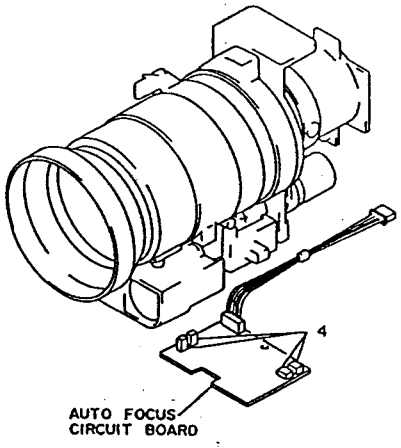


Fig. 2-80

4-3. Focus Motor Removal

1. Remove the lens block. (See Figs. 2-76, 2-77, 2-78)
2. Open the auto focus circuit board. (See Fig. 2-79)
3. Disconnect connector CN12F. (See Fig. 2-81)
4. Remove one (1) screw holding the focus motor. (See Fig. 2-82)
5. Remove the focus motor in the direction of the arrow.

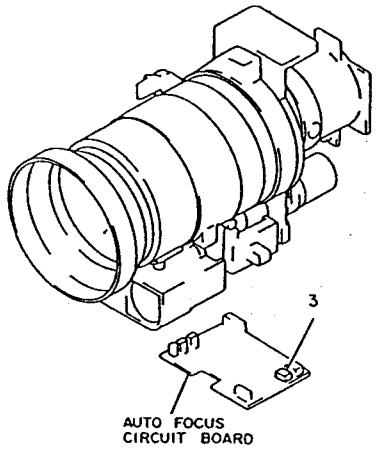


Fig. 2-81

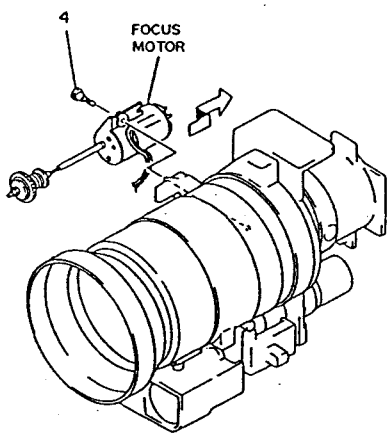


Fig. 2-82

4-4. Zoom Motor Removal
1. Remove the lens block.
   (See Figs. 2-76, 2-77, 2-78)
2. Open the auto focus circuit board.
   (See Fig. 2-79)
3. Disconnect connector CN14F.
   (See Fig. 2-83)
4. Remove two (2) screws holding the zoom motor. (See Fig. 2-84)
5. Remove the zoom motor in the direction of the arrow.

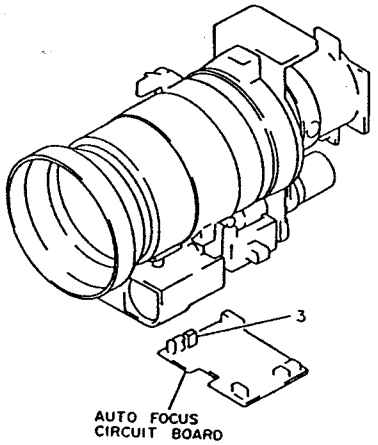


Fig. 2-83

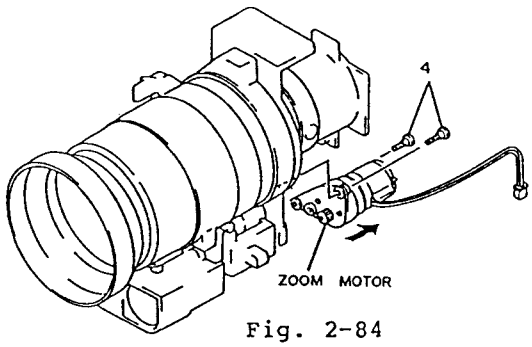


Fig. 2-84

4-5. Iris Block Removal
1. Remove the lens block.
   (See Figs. 2-76, 2-77, 2-78)
2. Open the auto focus circuit board.
   (See Fig. 2-79)
3. Remove the focus motor.
   (See Figs. 2-81, 2-82)
4. Remove the zoom motor.
   (See Figs. 2-83, 2-84)
5. Remove four (4) screws holding the relay lens block. (See Fig. 2-85)
6. Remove the iris block.

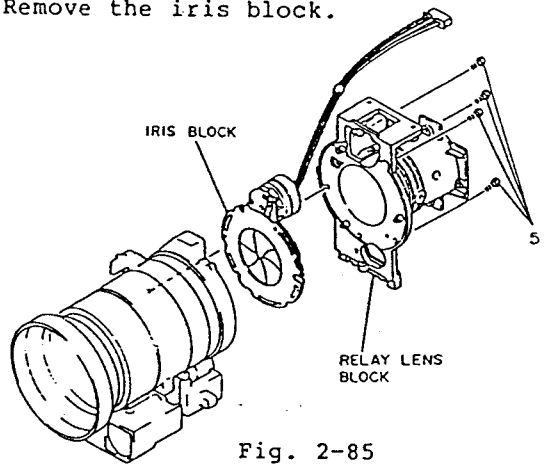


Fig. 2-85

4-6. Focus Switch Removal
1. Remove the lens block.
   (See Figs. 2-76, 2-77, 2-78)
2. Open the auto focus circuit board.
   (See Fig. 2-79)
3. Disconnect connector CN13F.
   (See Fig. 2-86)
4. Remove one (1) screw holding the focus switch. (See Fig. 2-87)

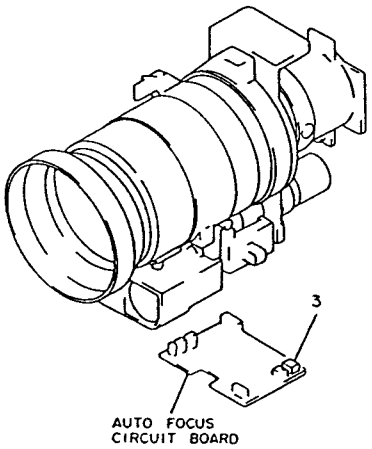


Fig. 2-86

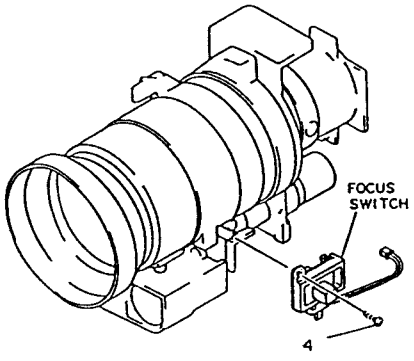


Fig. 2-87

4-7. Focus Sensor Circuit Board Removal
1. Remove the lens block.
   (See Figs. 2-76, 2-77, 2-78)
2. Remove the auto focus circuit board.
   (See Figs. 2-79, 2-80)
3. Remove two (2) screws holding the focus sensor circuit board.
   (See Fig. 2-88)

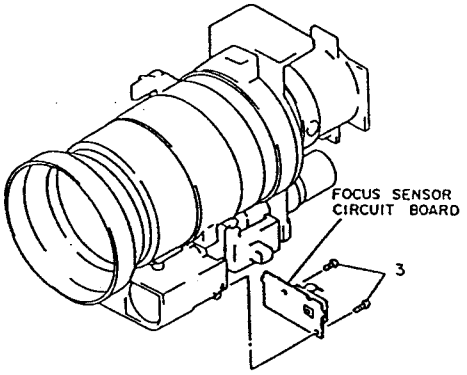


Fig. 2-88

5. ELECTRONIC VIEWFINDER (EVF)

Remove the electronic viewfinder (EVF) as previously given.

5-1. Bottom Case Removal
1. Remove one (1) screw holding the EVF cable holder. (See Fig. 2-89)
2. Remove the EVF cable holder in the direction of the arrow.
3. Remove two (2) screws holding the bottom case.
4. Remove the bottom case in the direction of the arrow.

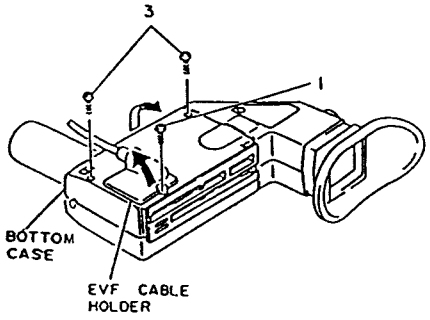


Fig. 2-89

5-2. Electronic Viewfinder (EVF) Circuit Board Removal
1. Remove the bottom case.
   (See Fig. 2-89)
2. Remove the CRT holder in the direction of the arrow. (See Fig. 2-90)
3. Remove the EVF circuit board, MIC circuit board, indi. circuit board and CRT in the direction of the arrow from the top case.
4. Disconnect two (2) connectors (CN1D, CN401) on the EVF circuit board.
   (See Fig. 2-91)
5. Disconnect CRT socket.

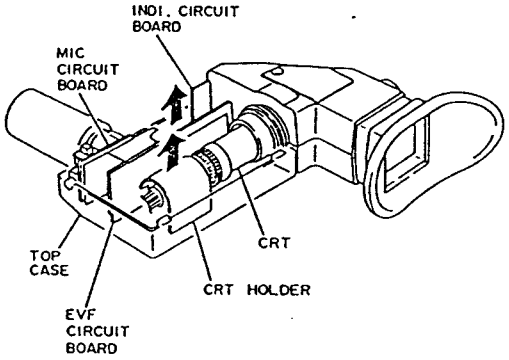


Fig. 2-90

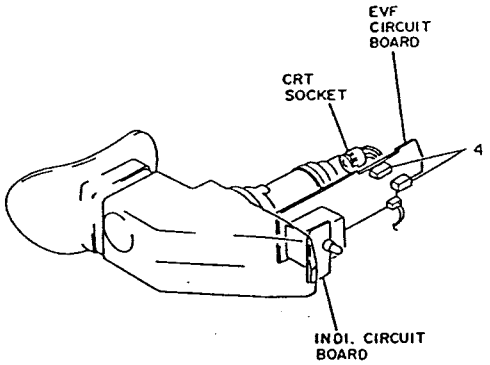


Fig. 2-91

5-3. MIC Circuit Board Removal
1. Remove the bottom case.
   (See Fig. 2-89)
2. Pull out the MIC circuit board in the direction of the arrow from the top case. (See Fig. 2-92)
3. Disconnect connector CN401 on the MIC circuit board. (See Fig. 2-93)

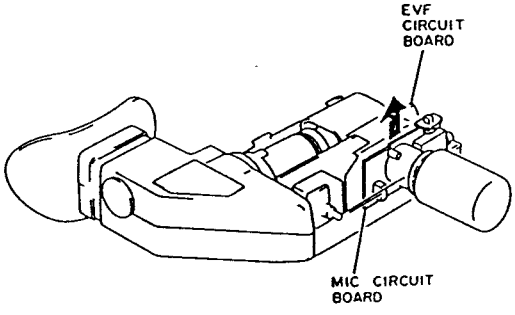


Fig. 2-92

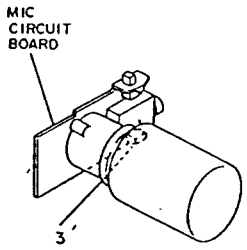


Fig. 2-93

5-4. CRT Removal

1. Remove the bottom case. (See Fig. 2-89)
2. Remove the CRT holder in the direction of the arrow. (See Fig. 2-90)
3. Remove the EVF circuit board, MIC circuit board, indi. circuit board and CRT in the direction of the arrow from the top case.
4. Open the mirror cover. (See Fig. 2-94)
5. Remove one (1) screw holding the EVF lens bottom cover.
6. Open the EVF lens bottom cover in the direction of the arrow and remove the CRT from the EVF lens top cover.
7. Disconnect connector CN1D on the EVF circuit board.
8. Disconnect CRT socket.

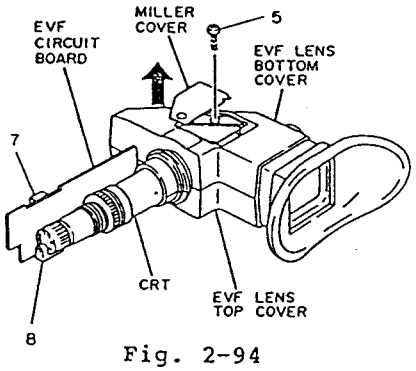


Fig. 2-94

CHAPTER 3

MECHANICAL ADJUSTMENT

JIGS AND TAPES FOR ADJUSTMENT

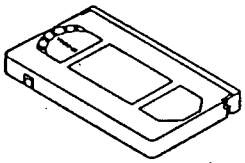
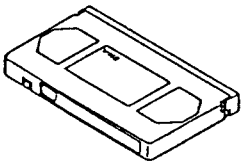
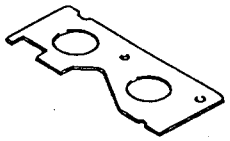
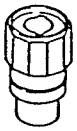
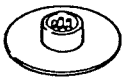
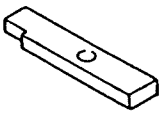
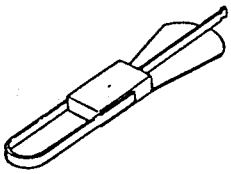
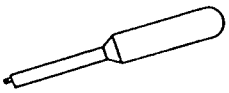
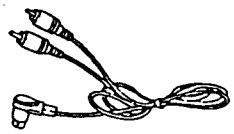
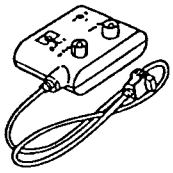
1. Back Tension Meter Parts No. 7099004 	2. PAL Alignment Tape Parts NO. 7099052 	3. Master Plane Parts No. 7099279 	4. Torque Gauge Parts No. 7099039 
5. Torque Gauge Adapter Parts NO. 7099204 	6. Dummy Reel Parts No. 7099043 	7. Reel Disk Height Jig Parts No. 7099038 	8. 1.5㎜/0.9㎜ Hexagonal Wrench
9. Fan Type Tension Gauge 	10. Back Focus Adjustment Driver Parts No. 7099205 	11. AV Input Cable 	12. RF Converter Unit (VM-RF70E) 
13. Power Ext. Cable Parts No. 7099326 			

TABLE OF FLAT PACKAGE ICS / SOLDERING IRON TIPS

SYMBOL-No	DESCRIPTION	IRON TIP -No
CAMERA SECTION		
IC005	HD62991CA	9
IC006	HA118002	13
IC007	HA118031A	10
IC1401	HD614042FJ48	6
IC1404	RC74HC157	12
VTR SECTION		
IC601	HD49744	6
IC901	HD407408	7

1. TAPE LOADING SYSTEM COMPONENTS ADJUSTMENT

1-1. LOADING CAM GEARS (SUPPLY/TAKE-UP) ADJUSTMENT (Fig. 3-1)

Always perform this adjustment when reinstalling the loading cam gears. Be sure to check this adjustment when reinstalling the loading gear.

1. Align mark (A) on the supply loading cam gear and mark (B) on the take-up loading cam gear when reinstalling them. Check that the supply and take-up guide roller bases are in the unloading state.

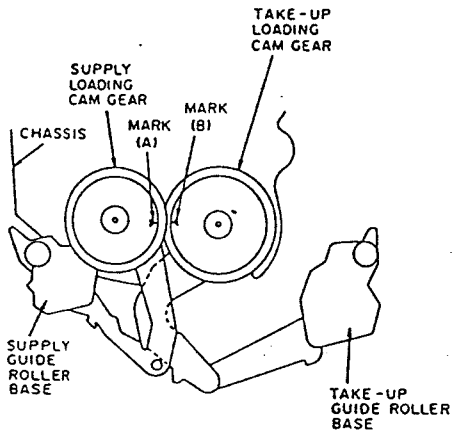
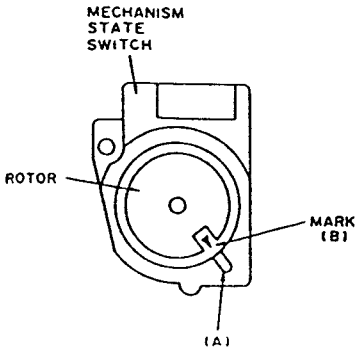


Fig. 3-1

1-2. MECHANISM STATE SWITCH AND DRIVING GEAR ADJUSTMENT (Fig. 3-2)

Be sure to perform this adjustment when reinstalling the mechanism state switch and driving gear.

1. Align section (A) of the mechanism state switch and section (B) of the rotor.
2. Align hole (D) in the relay gear and hole in the chassis.
3. Install the driving gear into the chassis so mark (E) on the relay gear and hole (F) in the driving gear are aligned. Check that hole (G) of the driving gear and the hole in the chassis overlap each other at this time.
4. Install the mechanism state switch in the condition set in step 1 into the chassis. Check that mark (C) on the mechanism state switch, mark (E) on the relay gear and hole (F) in the driving gear are lined up in straight line.



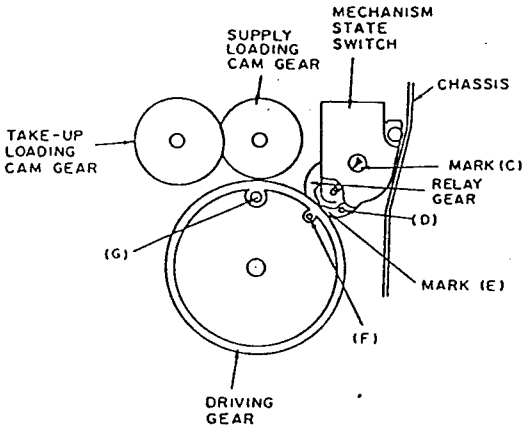


Fig. 3-2

1-3. LOADING GEAR AND TENSION POLE DRIVE ARM ADJUSTMENT (Fig. 3-3)

Be sure to perform this adjustment when reinstalling the loading gear and tension pole drive arm. Perform this adjustment after checking that the loading cam gears are installed correctly and are in the unloading state.

1. Reinstall the loading gear so its mark (A) and mark (B) on the supply loading cam gear are aligned.
2. Reinstall the tension pole drive arm so mark (D) on the relay gear and hole (C) in the tension pole drive arm are aligned.

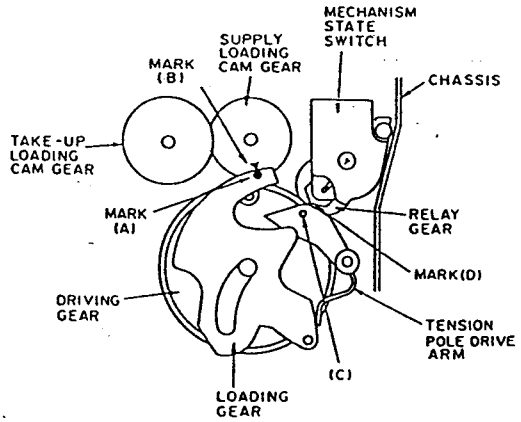


Fig. 3-3

2. TAPE TRANSPORT SYSTEM COMPONENTS CHECK/ADJUSTMENT

The tape transport system is the path from the supply reel to the take-up reel via the video heads. The tape transport components, especially the components which come into direct contact with the tape, should be kept clean without damage, dust and oil, etc. adhering to the contact surfaces. The tape transport system is adjusted before shipment from the factory, so when any transport components are replaced, the transport system is stabilized by correctly adjusting the new components.

2-1. REEL TABLE HEIGHT ADJUSTMENT (Fig. 3-4)

1. Remove the cassette lid, right case and mount the master plane to the cassette holder.
2. Place a reel table height jig on the master plane and fit it to the reel table.
3. Check that the top of the reel table is positioned between sections A and B of the reel table height jig.
4. When the top of the reel table is not positioned between section A and B, adjust the number of the spacers (2 types: 0.25 mm and 0.5 mm thick) at the bottom of the reel table.

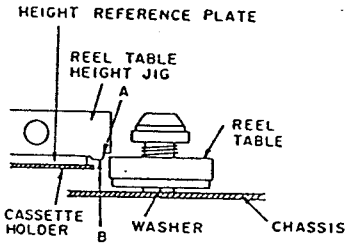


Fig. 3-4

2-2. TENSION POLE POSITION/TENSION ADJUSTMENT (Fig. 3-5)

Position Adjustment (Fig. 3-5)

1. Set the tension spring to position "C" on the spring holder.
2. Cover up the supply end sensor photocell located midway on the left side of the tape mechanism.
3. Place instrument in the "play" mode.
4. After loading is completed, loosen screw (B) holding the tension band holder and adjust the position of the tension band holder so that the tension pole is in section (A) (concave) of the guide roller rail.
5. After adjustment is completed, tighten screw (B).

Tension Adjustment (Fig. 3-5)

1. Load the instrument with the back tension meter.
2. Place the instrument in the "play" mode.
3. Read the scale on the supply.
4. This reading should be between 17 and 24.
5. Move the tension arm spring to the position "A" or "B" on the spring holder when the tension adjustment tape reads 25 or higher, and to the position "D" or "E" on the spring holder when it is 16 or lower, and adjust the back tension for a nominal reading of 17-24 on the scale.
6. Recheck the tension arm position when the back tension is changed greatly (5 or more).

Note: The instrument must be in a horizontal position for this adjustment.

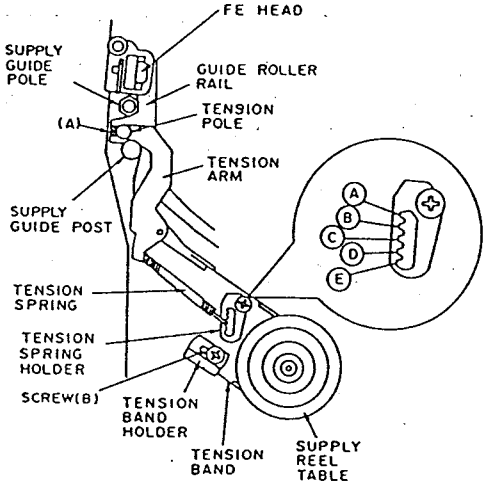


Fig. 3-5

2-3. SUPPLY/TAKE-UP GUIDE POLES HEIGHT ADJUSTMENTS (Fig. 3-6)

1. Remove the cassette lid, right case and mount the master plane to the cassette holder.
2. Place a reel table height jig on the master plane and fit it to the guide pole.
3. Adjust the nut on the top of the guide pole so that the upper flange is aligned with the top edge of the height jig.

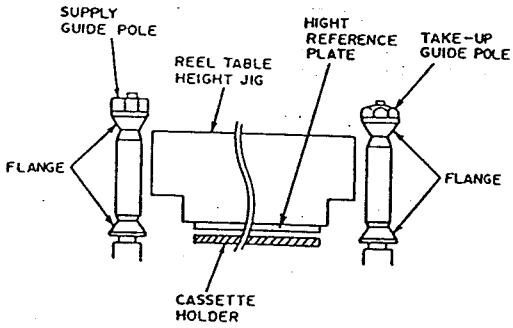


Fig. 3-6

2-4. SUPPLY/TAKE-UP GUIDE ROLLERS HEIGHT ADJUSTMENTS (Figs. 3-7, 3-8)

1. Remove the cassette lid, right case and mount the master plane to the cassette holder.
2. Place a reel table height jig on the master plane and fit it to the guide roller.
3. Tighten the guide roller fixing screw at the position where the upper flange of the guide roller and the top of the jig match.
4. Run the tape and check that the tape does not curl and ride over, and then perform the electrical adjustment.
5. Connect the oscilloscope to TP206 on the main board.

6. Playback the colour bar signal on alignment tape (PAL) and the TRACKING control (RT605) to the click (centre) position.
7. Check that the FM waveform is flat.
8. Then check that the FM drops at the start and end of the envelope are equal when the TRACKING control is turned to the left and right.
9. When the FM drops at the start and end of the envelope are not equal, loosen the guide roller fixing screw, turn the guide roller a little to the left and right so that they are equal.
10. Tighten the fixing screw.

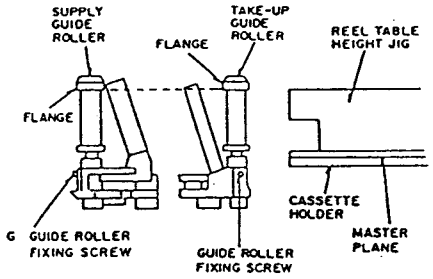


Fig. 3-7

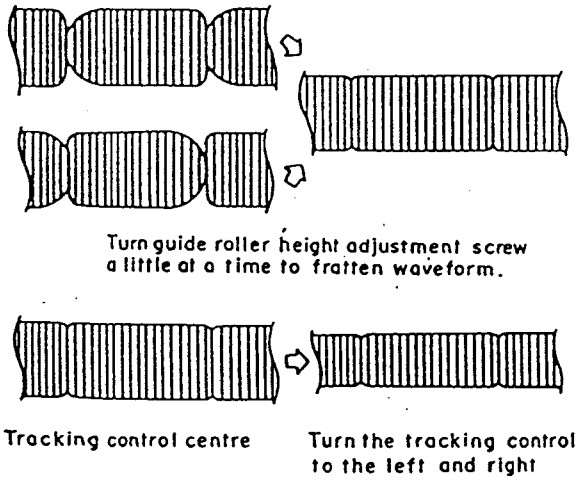

Turn guide roller height adjustment screw a little at a time to fratten waveform.
Tracking control centre
Turn the tracking control to the left and right

Fig. 3-8

2-5. A/C HEAD ADJUSTMENT (Figs. 3-9, 3-10, 3-11)

Perform the height, tilt and azimuth adjustments repeatedly to determine the A/C head installation position, then adjust the X value.
Detailed adjustment below is the procedure when the A/C head is replaced; be sure to do precise adjustment after rough adjustment.

Rough Adjustment (Fig. 3-9)

1. Remove the cassette lid, right case and mount the master plane to the cassette holder.
2. Adjust NUT (A), AZIMUTH SCREW (B), TILT HEX. SCREW (C) and SCREW (D) so the height difference between the height reference plate and A/C head plate is approx. 1.78 mm and A/C head base and A/C head plate are parallel.

Precise Adjustment (Figs. 3-9, 3-10)

3. Connect the oscilloscope to audio output (AV OUT).
4. Playback a 1 kHz audio signal (color bar signal) on alignment tape (NTSC).
5. Adjust AZIMUTH SCREW (B) and TILT HEX. SCREW (C) for maximum output.

X-Value Adjustment (Figs. 3-9, 3-11)

6. Connect the oscilloscope to TP206 on the main board.
7. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the main board)
8. Set the TRACKING control (RT605) to the click (centre) position.
9. Playback the colour bar signal on alignment tape (PAL).
10. Adjust the X-value adjustment nut so that the signal at TP206 (FM envelope) is maximum. Also adjust so that the FM envelope changes as shown in Fig. 3-11 when the tracking control is turned to the left and right.

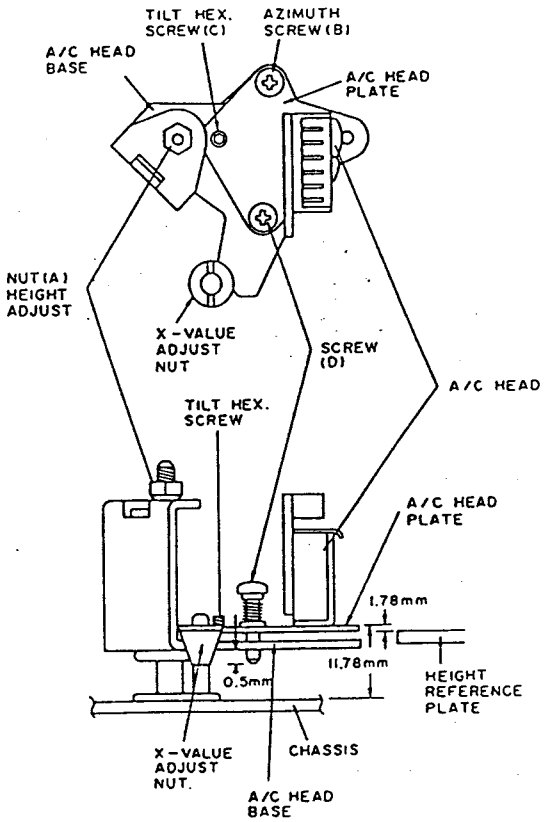


Fig. 3-9

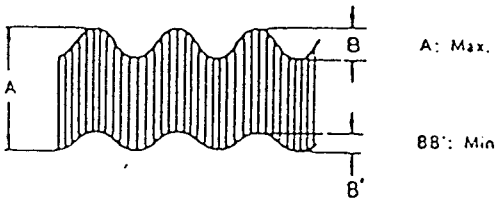


Fig. 3-10

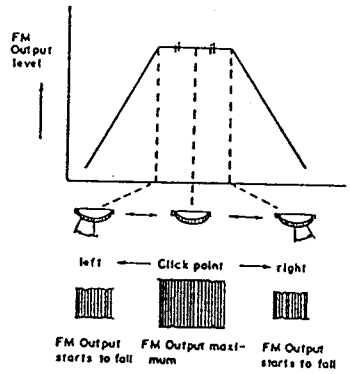


Fig. 3-11

2-6. ADJUSTMENT AFTER REPLACING THE CYLINDER (Fig. 3-12)

When the cylinder is replaced, the relative height with respect to the guide rollers or the X-value, etc. drifts (this drift is small when the cylinder is replaced correctly). Therefore, it is necessary to readjust the tape transport system and servo system. Perform checks and adjustments by the following steps.

1. Load a blank tape and play it. Check that no curling or creasing occurs around the guide rollers. If curling or creasing occurs, fine adjust the height of the guide rollers.
2. Confirm that the FM envelope is flat and level fluctuations are minimum. If it cannot be confirmed, adjust the height of the guide rollers. See the next item for perform these checks adjustment.
3. Check or adjust the head switching point. See CHAPTER 4 for how to adjust this item.
4. Confirm that the X-value adjustment is correct (do not adjust the X-value even if it is not correct). If it can be confirmed, proceed to step 7, and if it cannot be confirmed, proceed to step 5.
5. Check or adjust the tracking preset. See CHAPTER 4 for how to adjust this item.
6. Adjust the X-value.
7. Adjust the record luma/chroma level. See CHAPTER 4 for how to adjust this item.

Check Flatness and Level Fluctuations of the FM Output (Fig. 3-12)

1. Connect the oscilloscope to TP206 on the main circuit board.
2. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the main circuit board.)
3. Set the TRACKING control (RT605) to the click position.
4. Fine adjust the voltage level range of the oscilloscope and set the FM output to 4 graduations.
5. Turn the TRACKING control to set the maximum amplitude of the FM output to 3 graduations.
6. Check that the minimum amplitude is more than 2.0 graduations.

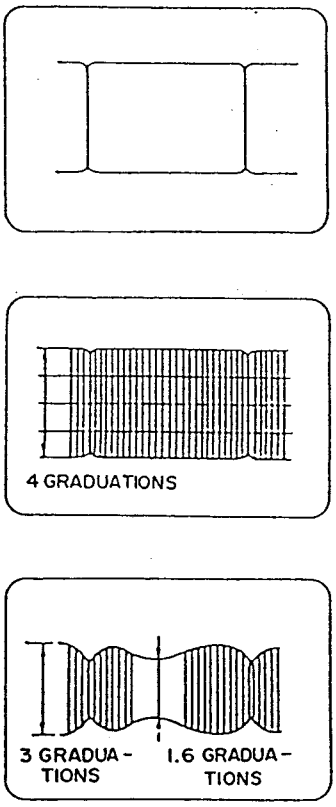


Fig. 3-12

3. TENSION AND TORQUE CHECKS

It is necessary to check the tension, torque and compression strength in the tape take-up section and moving section to smoothen the tape transport and to satisfy the basic performance of the VTR. When the tape transport is not smooth or the tape speed is abnormal, detect the faulty section by this checking, and then check again after replacing the faulty parts with normal ones to complete the work.

Item	VTR Operation	Measured Reel	Measurement Value	Remarks
Main brake torque	STOP	Supply	140 g.cm or more	
		Take-up	100 g.cm or more	
Slack removal torque	UNLOADING	Supply	90-200 g.cm	
Fast forward torque	F.FWD	Take-up	400 g.cm or more	
Rewind torque	REW	Supply	400 g.cm or more	
Take-up torque	PLAY	Take-up	80-110 g.cm	
Back-tension torque	F.FWD	Supply	4 - 10 g.cm	
	REW	Take-up		

CHAPTER 4

ELECTRICAL ADJUSTMENT

1. CORRECT SETUP VHS MOVIE ADJUSTMENT

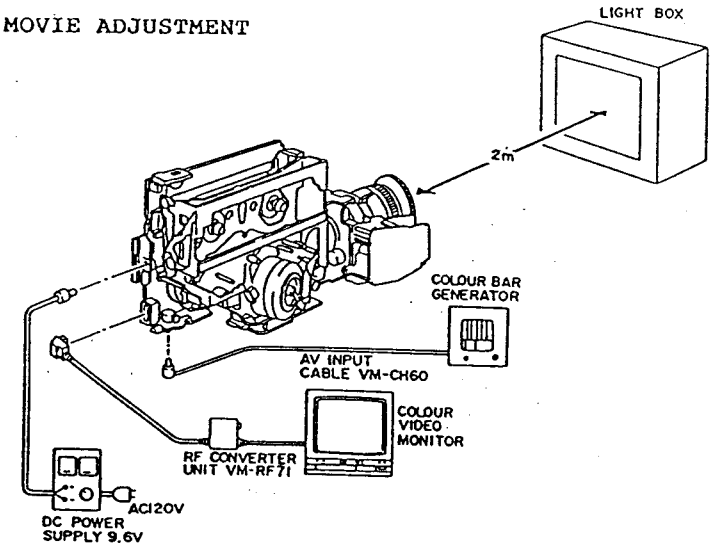


Fig. 4-1 Correct Setup VHS MOVIE Adjustment

2. CAMERA SECTION

2-1. CIRCUIT BOARD LOCATIONS

1. Process Circuit Board
2. Sensor Circuit Board
3. Self Timer Switch Circuit Board
4. Control Circuit Board
5. Control Switch Circuit Board
6. Auto Focus Circuit Board
7. Focus Sensor Circuit Board
8. Zoom Speed Switch Circuit Board

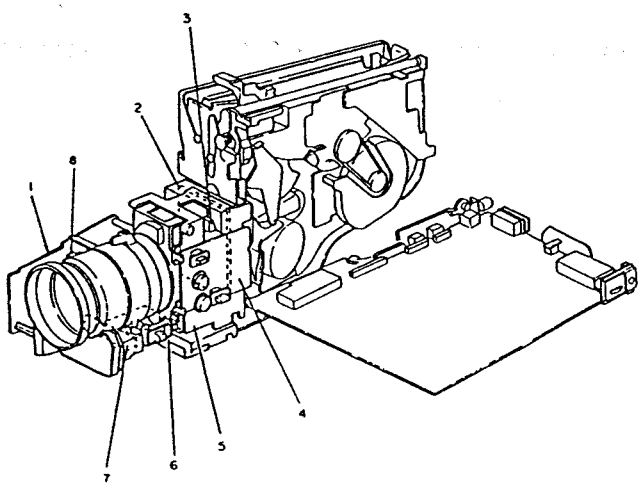


Fig. 4-2 Circuit Board Locations

2-2. TEST EQUIPMENT REQUIRED

The following equipment is required for adjustment of the VHS MOVIE.

Oscilloscope (dual trace, 10:1 probe)
(Waveform Monitor)
(Vectorscope)
Digital Voltmeter (DVM)
Frequency Counter
Colour Video Monitor
3100 K Light Box
Gray Scale Chart
Colour Bar Chart
Resolution Chart
Light Meter
Backfocus Chart
DC Power Supply
Backfocus Adjustment Driver

2-3. ADJUSTMENT CONDITIONS

1) Check that the VTR section has been adjusted properly before adjusting the camera section.
2) Connect this unit, power a supply, a colour video monitor and jig, etc. as shown in Fig. 4-1.
3) Place the chart (light box) 2m away from the camera (lens surface) when otherwise not specified.
4) Point the camera at the chart to fill the video period when otherwise not specified.
5) Use the 10:1 probe of the oscilloscope when otherwise not specified.
6) Connect the oscilloscope to TP101-1. Adjust RT901 to minimize the voltage of the waveform.

2-4. PRESET POSITION OF CUSTOMER CONTROLS AND SWITCHES

OPERATE switch ..... ON
CAM./VIDEO switch ..... CAM. position
WHITE BAL.
switch ..... AUTO position
IRIS control ..... DETENT position
FOCUS switch ..... MAN. position
SHUTTER switch ..... OFF position
NEGA/POSI switch ..... POSI position

2-5. CAMERA ADJUSTMENT

1) Subcarrier Frequency Adjustment (Fig. 4-52)
This adjustment set for frequency adjustment subcarrier.

Test Point:	TP102	Process
Adjust:	CT101 (Fo ADJ)	Process (IC110)
Observe:	Frequency Counter	

1. Connect the frequency counter to TP102.
2. Adjust CT101 for 4.433619 MHz ± 20 Hz.

Note: Be careful when applying an adjustment driver to CT101 because the stray capacitance of the driver may vary the frequency.

2) VCO Lock Adjustment (Fig. 4-52)

Test Point:	TP103	Process
Adjust:	CT102 (VCO Lock)	Process
Observe:	DVM	

1. Connect the DVM to TP103.
2. Adjust CT102 for 3.2 V ± 0.1 V.

Note: Be careful when applying an adjustment driver to CT102 because the stray capacitance of the driver may affect the frequency. Use a non-metalic adjustment tool.

3) Drive Pulse Frequency Adjustment (Fig. 4-51)
This adjustment sets the drive pulse frequency to the specified value.

Test Point:	TP001	Sensor
Adjust:		
CT001	(DRIVE CLOCK Fo)	Sensor
Observe:	DVM	

1. Connect the DVM to TP001.
2. Adjust CT001 for 3.0 V ± 0.1 V .

Note: Be careful when applying an adjustment driver to CT001 because the stray capacitance of the driver may vary the voltage. Use a non-metalic adjustment tool.

4) Backfocus Adjustment (Fig. 4-3)
The purpose of this adjustment is to ensure proper focus tracking throughout the zoom range.

Adjust:	BACKFOCUS ADJUSTMENT POINT (BACKFOCUS LENS)
Observe:	Colour Video Monitor

1. Position the camera section three (3) meters from the backfocus chart and illuminate the object with approximately 50 lux.
2. Set the zoom ring to the wide angle position and the focus ring to the three (3) meter position.
3. Loosen the hexagonal screw. (See Fig. 4-3)
4. Insert the backfocus adjustment driver into the backfocus adjustment point to adjust for optimum focus. (There are two backfocus adjustment point holes. Use the adjustment point opposite to the hexagonal screw for adjustment).
5. Set the zoom ring to the telephoto end and confirm that the chart is in focus. If it is not in focus, return the zoom ring to the wide angle end and readjust step 4.
6. Confirm that the chart is approximately in focus at both the wide angle and telephoto ends with the focus ring set to the three (3) meter position.

Note: After adjustment is completed, tighten the hexagonal screw with the backfocus adjustment driver inserted into the adjustment point (holding the backfocus adjustment

driver by hand) so that the adjusted position will not drift. After tightening the hexagonal screw, fix it with locking paint.

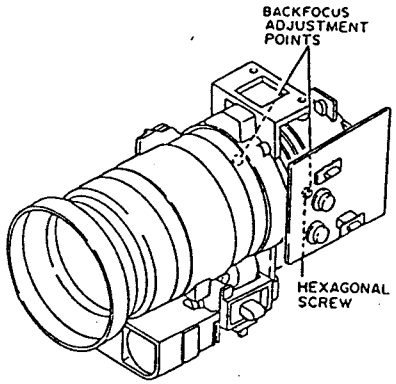


Fig. 4-3 Backfocus Adjustment

5) Flutter Canceller Adjustment
(See Fig. 4-4, 4-51)

This adjustment minimizes the carrier in the black level. If this adjustment is incomplete, fluttering occurs when the lens is capped.

Test Point: Video Out (A/V OUT)
Adjust:
RT002 (FLUTTER CANCELLER) Sensor
Observe: Vectorscope

1. Cap the lens.
2. Connect the video out (A/V OUT) to a 75 ohms terminated vectorscope.
3. Adjust RT002 so that the bright spots on the vectorscope converge into one point. (See Fig. 4-8)

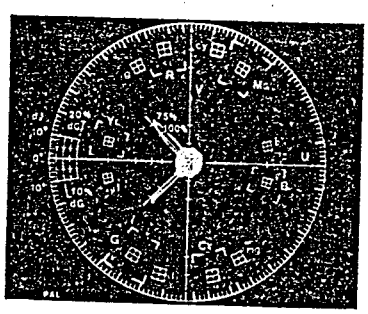


Fig. 4-4 Flutter Canceller Adjustment

6) Shading and Surface Roughness Adjustment
(Figs. 4-5, 4-6, 4-7, 4-51, 4-52)

This suppresses not only the luminance and chroma shading but also the roughness of the picture on the monitor screen.

Test Point: Video Out (A/V OUT)
TP207 (VIDEO OUT) Main
Adjust:
RT001 (SURFACE ADJ) Sensor
RM101-6 (LUMA SHADING) Process
RM101-7 (CHROMA SHADING) Process

Observe: Oscilloscope
Vectorscope
Colour Video Monitor

Adjustment using the oscilloscope

1. Cap the lens.
2. Adjust RT001 to minimize the roughness on the monitor screen and shading at the edges (top/bottom and left/right) of the picture (See Fig. 4-5)
3. Connect the oscilloscope to TP207 (VIDEO OUT) on the main circuit board.
4. Trigger the oscilloscope at H. rate. (Use TP101-11 on the process circuit board.)
5. Adjust RM101-6 to make the waveform flat. (See Fig. 4-6)
6. Adjust RM101-7 so that the no colour shading is obtained on the monitor screen.

Adjustment using the vectorscope and oscilloscope

1. Cap the lens.
2. Adjust RT001 to minimize the roughness on the monitor screen and shading at the edges (top/bottom and left/right) of the picture (See Fig. 4-5)
3. Connect the oscilloscpoe to TP207 on the main circuit board.
4. Connect the oscilloscope at H.rate. (Use TP101-11 on the process circuit board.)
5. Adjust RM101-6 to make the waveform flat (See Fig. 4-6)
6. Connect the video out (A/V OUT) to 75 ohms terminated vectorscope.
7. Adjust RM101-7 so that the carrier in the vector is minimum. (See Fig. 4-7)

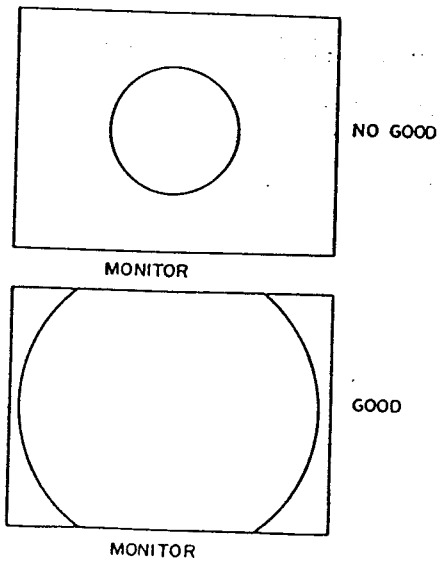


Fig. 4-5 Shading and Roughness Adjustment

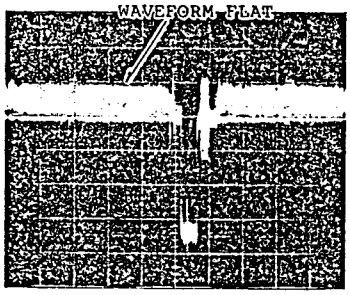


Fig. 4-6 Shading and Roughness Adjustment

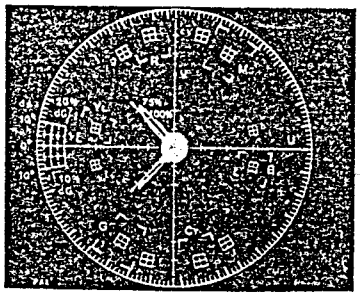


Fig. 4-7 Shading and Roughness Adjustment

7) Matrix Adjustment
(Figs. 4-8, 4-52)

This adjustment corrects for unevenness in tint.

Test Point:	TP101-4	Process
Adjust:	RM101-8 (MATRIX)	Process
observe:	Oscilloscope	

1. Aim the camera at the colour chart.
2. Connect the oscilloscope to TP101-4.
3. Trigger the oscilloscope at H. rate. (Use TP101-11 on the process circuit board.)
4. Adjust RM101-8 so that the blue level becomes 70 % ± 10 % of the white level. (See Fig. 4-8)

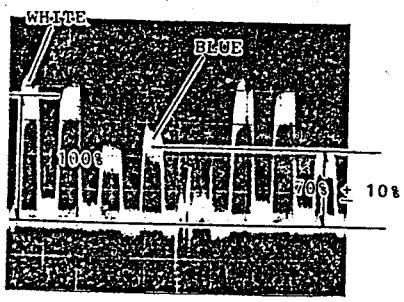


Fig. 4-8 Matrix Adjustment

8) White Balance Control Adjustment
(Fig. 4-52)

Test Point:	TP101-3	Process
Adjust:		
	WHITE BAL. control	Left side of the case
Observe:	DVM	

1. Confirm that the WHITE BAL. switch is in the MAN position.
2. Connect the DVM to TP101-3.
3. Adjust the WHITE BAL. control, located on the left side of the case, for 1.4 V ± 0.05 V.

Note: White Balance Control adjustment is required prior to performing Black Balance / Luma setup adjustment, White Balance adjustment, program AE adjustment AIC level adjustment and chroma level adjustment.

9) Black Balance / Luma Setup Adjustment
(Figs. 4-9, 4-10, 4-11, 4-52)

This adjustment sets the proper black balance of the picture.

Test Point:	Video Out (A/V OUT) TP207 (VIDEO OUT)	Main
Adjust:		
RM101-9	(BLU SETUP)	Process
RM101-10	(RED SETUP)	Process
RM101-11	(GRN SETUP)	Process
RM101-12	(LUMA SETUP)	Process
Observe:	Vectorscope Oscilloscope	

Adjustment using the oscilloscope

1. Cap the lens.
2. Connect the oscilloscpoe to TP207 on the main circuit board.
3. Trigger the oscilloscope at H.rate.
4. Connect TP101-4 (BLU) and TP101-5 (RED) to ground (TP101-2).
5. Adjust RM101-11 For minimum carrier in waveform. (See Fig. 4-9)
6. Remove the ground (TP101-2) connections from TP101-4 and TP101-5.
7. Adjust RM101-9 and RM101-10 for minimum carrier in waveform.
8. Adjust RM101-12 for 35 mVp-p ± 10 mV (5 IRE ± 1 IRE) from blanking to the centre of the waveform (See Fig. 4-11)

Adjustment using the vectorscope and oscilloscope

1. Cap the lens.
2. Connect the video out (A/V OUT) to 75 ohms terminated vectorscope.
3. Connect the TP101-4 (BLU) and TP101-5 (RED) to ground (TP101-2).
4. Adjust RM101-11 so that the bright spot is positioned at the centre of the vectorscope screen. (See Fig. 4-10)
5. Remove the ground (TP101-2) connections from TP101-4 and TP101-5.
6. Adjust RM101-9 and RM101-10 so that the bright spot is positioned at the centre of the vectorscope screen.
7. Connect the oscilloscope to TP207 (VIDEO OUT) on the main circuit board.

8. Trigger the oscilloscope at H. rate. (Use TP101-11 on the process circuit board).
9. Adjust RM101-12 for 35 mVp-p ± 10 mV from blanking to the centre of the waveform. (See Fig. 4-11)

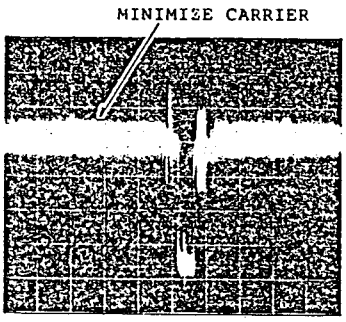


Fig. 4-9 Black Balance / Luma Setup Adjustment

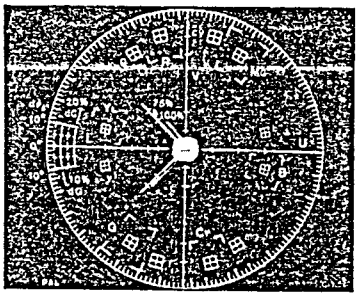


Fig. 4-10 Black Balance / Luma Setup Adjustment

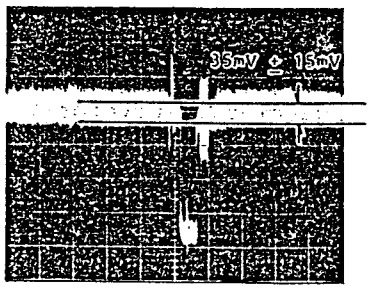


Fig. 4-11 Black Balance / Luma Setup Adjustment

10) White Balance Adjustment
(Figs. 4-12, 4-13, 4-52)
This procedure sets the correct red and blue signal levels for proper white balance circuit operation.

Test Point:	Video Out (A/V OUT)	
	TP207 (VIDEO OUT)	Main
Adjust:	RM101-4 (BLU GAIN)	Process
	RM101-5 (RED GAIN)	Process
Observe:	Vectorscope	
	Oscilloscope	

Adjustment using the oscilloscpe
1. Aim the camera at the gray scale chart.
2. Connect the oscilloscope to TP207 on the main circuit board.
3. Trigger the oscilloscope at H. rate. (Use TP101-11 on the process circuit board)
4. Adjust RM101-4 and RM101-5 to minimize the carrires at each step of the waveform. (See Fig. 4-12)

Adjustment using the vectorscope
1. Aim the camera at the gray scale chart.
2. Connect the video out (A/V OUT) to 75 ohms terminated vectorscope.
3. Adjust RM101-4 and RM101-5 so that the bright spot is positioned at the centre of the vectorscope screen. (See Fig. 4-13)

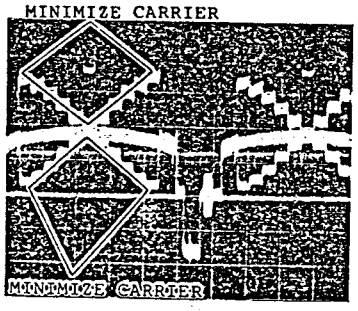


Fig. 4-12 White Balance Adjustment

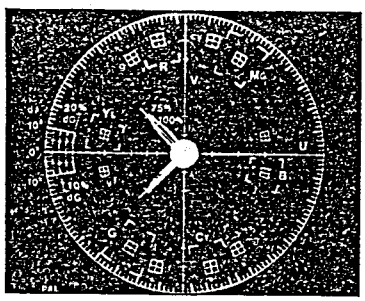


Fig. 4-13 White Balance Adjustment

11) Programme AE Adjustment
This adjustment sets the shutter speed switching point.
If this adjustment is incomplete, the programme AE does not operate correctly.

Test Point:	TP101-10	Process
Adjust:	RM101-1 (AE ADJ 1)	Process
	RM101-2 (AE ADJ 2)	Process
Observe:	DVM	

1. Connect the DVM to TP101-10.
2. Turn RM101-1 fully counterclockwise.
3. Adjust RM101-2 for 2.5 V ± 0.05 V.
4. Adjust RM101-1 so that the voltage difference occurring when the IRIS control is fully turned in the OPEN and CLOSE directions is 2.0 V ± 0.05 V.

5. Adjust RM101-2 so that the voltage when the IRIS control is fully turned in the OPEN direction is 3.5 V ± 0.05 V.

12) AIC Level Adjustment
(Fig. 4-14, 4-52)
This adjustment sets the balance point of the auto iris control.

Test Point: TP207 (VIDEO OUT) Main
Adjust: RM101-14 (AIC) Process
Observe: Oscilloscope

1. Aim the camera at the gray scale chart.
2. Adjust the position of the illumination so that the light is cast on the chart evenly (the white levels of the gray scale chart are equal on the left and right).
3. Connect the oscilloscope to TP207 (VIDEO OUT) on the main circuit board.
4. Trigger the oscilloscope at H. rate. (Use TP101-11 on the process board.)
5. Adjust RM101-14 for 735 mVp-p ± 15 mV from the blanking level to the centre of the white level on the gray scale.

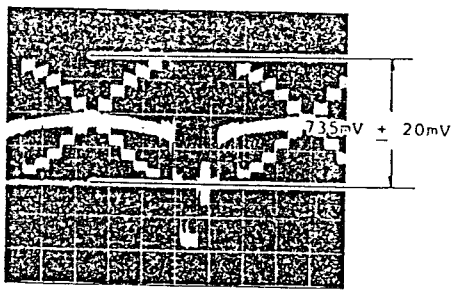


Fig. 4-14 AIC Level Adjustment

13) Chroma Level Adjustment
(Figs. 4-15, 4-16, 4-52)
This adjustment sets the chroma level.

Test Point: Video Out (A/V OUT)
TP207 (VIDEO OUT) Main
Adjust:
RM101-13 (CHROMA LEVEL) Process
Observe: Vectorscope
Oscilloscope

Adjustment using the oscilloscope
1. Aim the camera at the colour chart.
2. Connect the oscilloscope to TP207 on the main circuit board.
3. Trigger the oscilloscope at H. rate. (Use TP101-11 on the process circuit board.)
4. Adjust RM101-13 so that the red level of the waveform is 600 mV ± 50 mV (85 IRE ± 7 IRE).

Adjustment using the vectorscope
1. Aim the camera at the colour chart.
2. Connect the video out (A/V OUT) to 75 ohms terminated vectorscope.
3. Adjust RM101-13 so that the red vector is equal to more than 200% ± 5% when compared to the burst level.

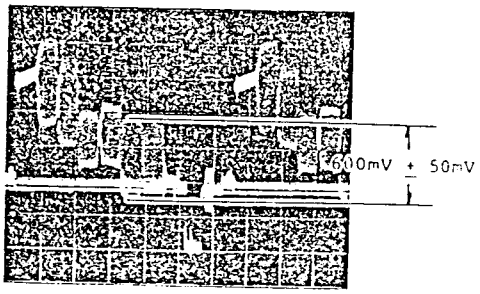


Fig. 4-15 Chroma Level Adjustment

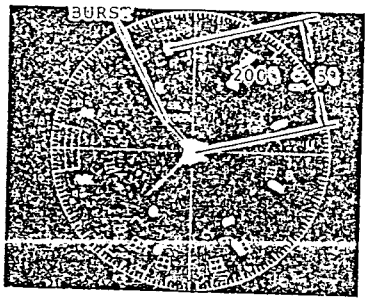


Fig. 4-16 Chroma Level Adjustment

14) Low Light Chroma Gain Adjustment
(Figs. 4-17, 4-52)

Test Point: TP101-1 Process
Adjust:
RT901 (LOW LIGHT CHROMA GAIN) Low LEVEL Compe.
Observe: Oscilloscope

1. Aim the camera at the gray scale chart.
2. Connect the oscilloscope to TP101-1.
3. Trigger the oscilloscope at H. rate. (Use TP101-11 on the process circuit board.)
4. Adjust RT901 using the SMD Pot. Adjustment Driver so that the second step to black comes to the centre of waveform (A). (See Fig. 4-17)

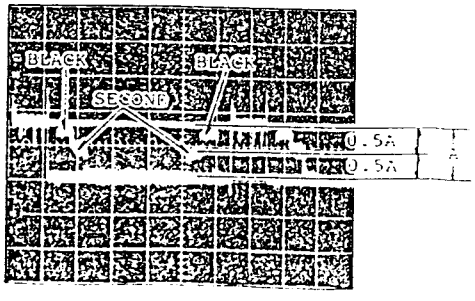


Fig. 4-17 Low Light Chroma Gain Adjustment

15) Auto White Balance Adjustment
(Figs. 4-18, 4-19, 4-52)
This adjustment sets the auto white balance performance.

Test Point:	Video Out (A/V OUT) TP207 (VIDEO OUT)	Main
Adjusts:		
RM101-3	(AUTO WHT BAL.)	Process
Observe:	Vectorscope Oscilloscope	

Adjustment using the oscilloscope
1. Set the WHITE BAL. switch to the AUTO position.
2. Attach the lightbalancing filter C10 (C8 + C2) over the lens.
3. Aim the camera at the gray scale chart.
4. Connect the oscilloscope TP207 on the main circuit board.
5. Trigger the oscilloscope at H. rate. (Use TP101-11 on the process circuit board.)
6. Adjust RM101-3 to minimize the carriers at each step of the waveform.

Adjustment using the vectorscope
1. Set the WHITE BAL.switch to the AUTO position.
2. Attach the lightbalancing filter C10 (C8 + C2) over the lens.
3. Aim the camera at the gray scale chart.
4. Connect the video out (A/V OUT) to 75 ohms terminated vectorscope.
5. Adjust RM101-3 so that the bright spot is positioned at the centre of the vectorscope screen.

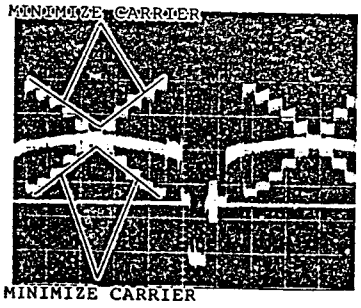


Fig. 4-18 Auto White Balance Adjustment

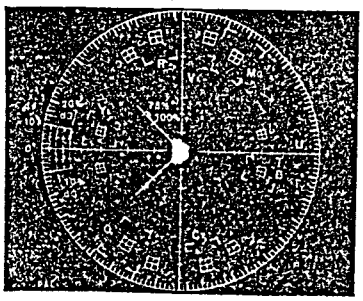


Fig. 4-19 Auto White Balance Adjustment

2-6. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT

1) EVF Horizontal Hold Adjustment
(Figs. 4-20, 4-53)
This procedure sets the horizontal sync frequency during VTR playback.

Test Point:	PG802-1	EVF
Adjust:	RT801 (H. HOLD)	EVF
observe:	Frequency Counter	

1. Connect the frequency counter to PG802-1.
2. Connect a 47 µF capacitor between pins 2 and 3 of PG802. (See Fig. 4-20)
3. Adjust RT801 for 15.62 kHz ± 0.05 kHz.
4. Disconnect the capacitor.

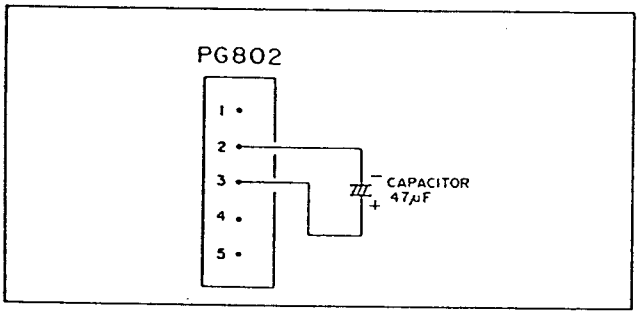


Fig. 4-20 EVF Horizontal Hold Adjustment

2) EVF Focus Adjustment (Fig. 4-53)
This control adjusts for optimum focus of the electronic viewfinder picture.

Adjust:	RT803 (FOCUS)	EVF
Observe:	EVF display	

1. Aim the camera at the resolution chart.
2. Adjust RT803 for maximum resolution of the EVF display.

3) EVF Picture Tilt Adjustment
(Fig. 4-21)
This adjustment procedure eliminates picture tilt on the EVF display.

Adjust:	Deflection Yoke
Observe:	EVF Display

1. Align the camera with the chart making sure that both the camera and the chart are on the same plane.
2. Loosen the deflection yoke nut.
3. Observe the viewfinder display, and turn the deflection yoke until the image is straight.

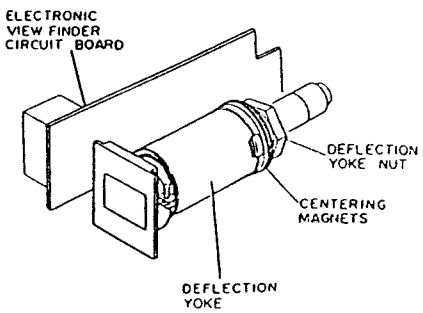


Fig. 4-21 EVF Picture Tilt and EVF Centring Adjustments

4) EVF Centring Adjustment (Fig. 4-19)
This adjustment centres the image observed by the camera in the EVF display.

Adjust: Centring Magnets
Observe: EVF Display

1. Aim the camera at the resolution chart and align the centre of the chart with the centre of the camera lens.
2. Adjust the centring magnets until the centre of the picture viewed by the camera is positioned in the centre of the EVF Display.

5) EVF Vertical Size Adjustment (Fig. 4-53)
This adjustment determines the vertical size of the image appearing in the EVF display.

Adjust: RT802 (V. SIZE) EVF
Observe: EVF Display

1. Aim the camera at the resolution chart, and line up the reference arrow head with the edge of the raster in the EVF.
2. Adjust RT802 so that the circle in the chart is round.

6) EVF Brightness Adjustment (Fig. 4-53)
This adjustment sets the brightness of the picture in the EVF display.

Adjust: RT805 (BRIGHT) EVF
Observe: EVF Display

1. Aim the camera at the gray scale chart.
2. Adjust RT805 so that the black and white portions of the chart displayed in the EVF match those displayed by the monitor.

2-7. AUTOFOCUS ADJUSTMENT

1) Autofocus Offset Adjustment (Figs. 4-22, 4-54)

Test Points:

TL1F (CINT)	Autofocus
TL2F (VCOMP)	Autofocus
TL3F (MODE)	Autofocus

Adjust:

VR11F (A-B OFFSET)	Autofocus
VR12F (A+B OFFSET)	Autofocus

Observe: Oscilloscope

1. Place the FOCUS switch in the "AUTO" position.
2. Cover the autofocus sensor with thick black paper.
3. Connect a jumper between TL3F and TL4F (GND).
4. Connect the channel-1 of oscilloscope to TL2F.
5. Connect the channel-2 of oscilloscope to TL1F.
6. Set the trigger mode of oscilloscope to CH-1 (INT) mode.
7. Adjust VR11F and VR12F so that the waveform for channel-2 is flat.
8. Disconnect a jumper.

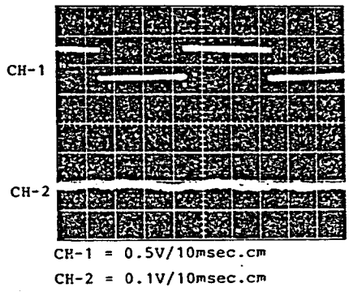


Fig. 4-22 Autofocus Offset Adjustment

2) Autofocus Sensor Position Adjustment (Fig. 4-23)

Adjust: Sensor Adjustment Screw
Observe: Monitor

Note: Perform this adjustment white all cases assembled.

1. Place the FOCUS switch in the "AUTO" position.
2. Position the camera section three (3) meters from the backfocus chart and illuminate the object with approximately 100 lux.
3. Set the focus ring to the three (3) meters position.
4. Adjust the Sensor Adjustment Screw for optimum focus of the monitored picture.

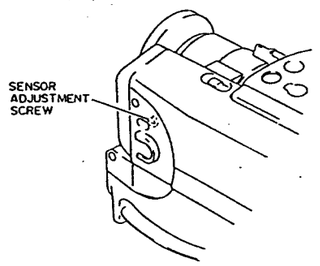


Fig. 4-23 Autofocus Sensor Position Adjustment

ADJUSTMENT PARTS LOCATIONS

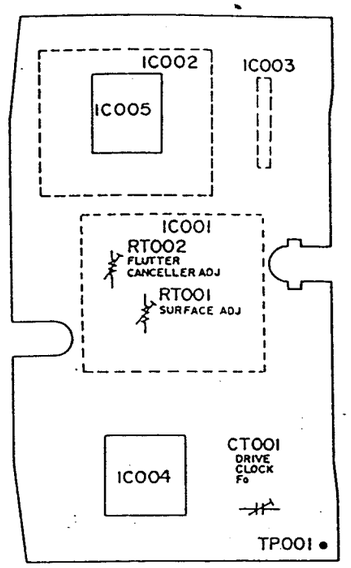


Fig. 4-51 Sensor Circuit Board (Solder Side)

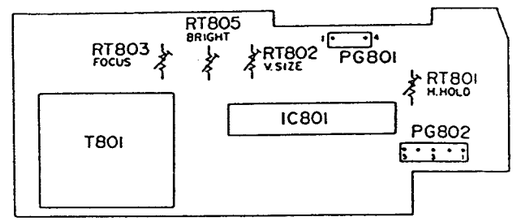


Fig. 4-53 Electronic Viewfinder (EVF) Circuit Board (Component Side)

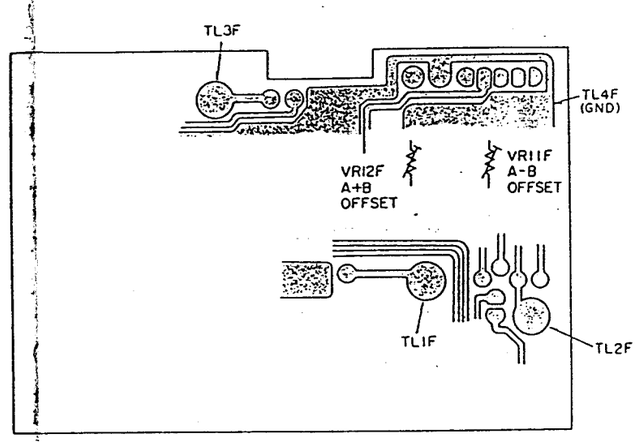


Fig. 4-54 Autofocus Circuit Board (Solder Side)

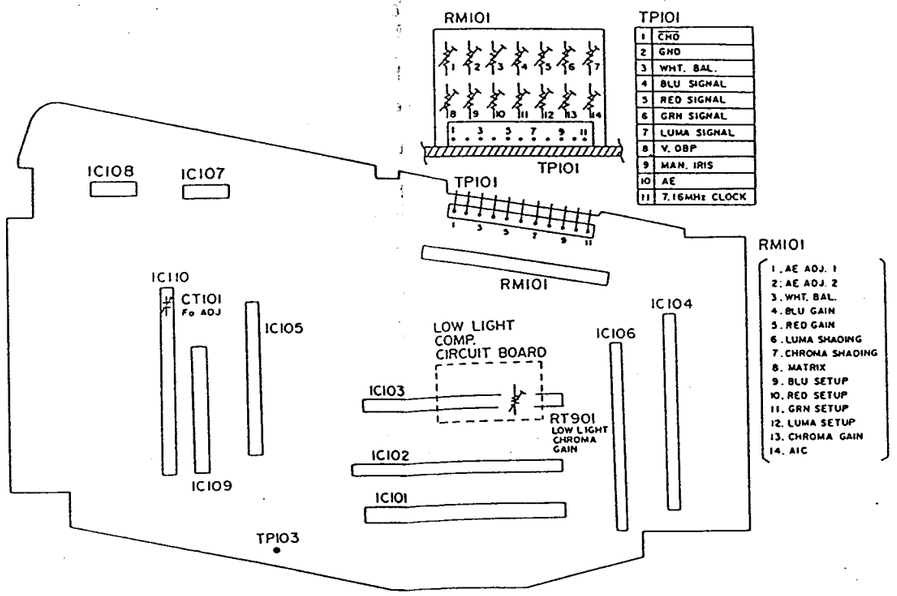


Fig. 4-52 Process Circuit Board (Solder Side)

3. VTR SECTION

3-1. CIRCUIT BOARDS LOCATION

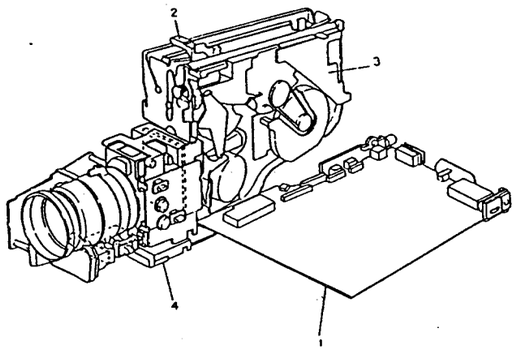


Fig. 4-101 Circuit Board Location

1. Main Circuit Board
2. Supply Sensor Circuit Board
3. Take-up Sensor Circuit Board
4. Character Generator Control Circuit Board

3-2. TEST EQUIPMENT REQUIRED

The following equipment is required for adjustment of the VHS MOVIE.

Oscilloscope (dual trace, 10:1 probe)
Digital Voltmeter (DVM)
Millivoltmeter
Frequency Counter
Colour Bar Generator (PAL)
Y/C Separator (Use table type S-VHS VTR same as VT-S80E)
Alignment Tape (PAL)
Blank Tape
Colour Bar Chart
Cross Hatch
Colour Video Monitor
DC Power Supply

3-3. ADJUSTMENT CONDITIONS

1) Check that the camera section has been adjusted properly before adjusting the VTR section.
2) Connect this unit, a power supply, a colour video monitor and jig, etc. as shown in Fig. 4-1.
3) Use the 10:1 probe of the oscilloscope when otherwise not specified.
4) this unit cannot be operated by pressing any function buttun for 30 minutes after condensation is detect. If you touch the dew sensor by mistake during servicing and adjustment and activate it to cause condensation to be detected, switch the power off (unplug the power supply from the EXT. DC jack or turn it off and remove clock back up LITIUM BATTERY if installed). Supply the power again after approx one (1) minute; the unit returns to the normal operation mode.

3-4. PRESET POSITION OF CUSTOMER CONTROLS AND SWITCHES

OPERATE switch ..... ON
CAM./VIDEO switch ..... VIDEO position
TRACKING control ..... Centre position
SHUTTER switch ..... OFF mode
FOCUS switch ..... MAN position
IRIS control ..... DETENT position
WHITE BAL. switch ..... AUTO position

3-5. SYSTEM CONTROL SECTION

1) Clock Frequency Adjustment (Fig. 4-151)
This adjustment sets the loss/gain of the clock within 2 seconds at the daily rate (within 1 minute at the monthly rate).

Test Point: IC901-44 Main
Adjust: CT901 (CLOCK Fo) Main
Observe: Frequency Counter Probe (10:1)

1. Connect the probe of the frequency counter to IC901-44 through a resistor (2.2M ohms).
2. Set the GATE switch of frequency counter to 10 sec position.
3. Adjust CT901 for 32.768kHz ± 1Hz.

2) Over-Discharge Level Adjustment (Figs. 4-102, 4-151)
This adjustment determines the over-discharge detection level. When the battery voltage drops to a specified level, the VTR will automatically shut off.
When the over-discharge detection level is set below 8.7V ± 0.15V the battery service life will reduced. Conversely, when the voltage is adjusted higher than 9.25V the usable time per charge is shortened.

Test Point:
PG902-2 (INT BATTERY TERMINAL) Main
Adjust:
RT901 (OVER-DISCHARGE LEVEL) Main
Observes: Colour Video Monitor
DVM

1. Apply DC 9.6V to the EXT DC jack on the main circuit board.
2. Set the CAM./VIDEO switch to the CAMERA position.
3. Set the SHUTTER switch to the AUTO position.
4. Load the instrument with a blank tape.
5. Place the instrument in the "Record" mode.
6. Press the DISPLAY button to display the battery level indicator and tape counter on the monitor screen.
7. Adjust RT901 so that the battery level indicator shows that the battery is approximately full charged.
8. Connect a DVM to PG902-2 on the main board.
9. Adjust the power voltage to 9.2V + 0.05V/- 0V at the PG902-2.

10. Turn to adjust RT901 so that the battery level indicator state (a) is changed to state (b) as shown in Fig. 4-102.

Note: Be sure to connect the EVF when performing this adjustment. If it is not connected, no characters will appear on the monitor screen.

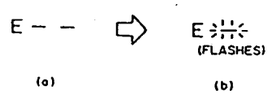


Fig. 4-102 Over-Discharge Level Adjustment

3) Character Position Adjustment (Figs. 4-103, 4-151)
This adjustment regulates the horizontal width of the character display on the screen.

Test Point: Video Out (A/V OUT)
Adjust:
CT902 (CHARACTER POSITION) Main
Observe: Colour Video Monitor

1. Apply a colour bar signal to the AV IN jack (or aim the camera at the colour bar chart).
2. Set the CAM./VIDEO switch to the CAM. position.
3. Load the instrument with a blank tape.
4. Place the instrument in the "Record" mode.
5. Press the DISPLAY and DATE/TIME button to display the battery level indicator, tape counter, date and time on the monitor screen.
6. Adjust CT902 so that the slash (/) on the left of the date display is set to the position shown in Fig. 4-103.

Note: Be sure to connect the EVF when performing this adjustment. If it is not connected, no characters will appear on the monitor screen.

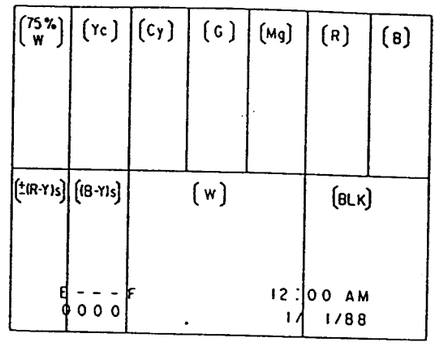


Fig. 4-103 Character Position Adjustment

3-6. SERVO SECTION

1) Add Vertical Sync Adjustment (See Fig. 4-104, 4-151)

Test Point: TP207 (Video Out) Main
Adjust:
RT603 (ADD VERTICAL SYNC) Main
Observe: Oscilloscope
Colour Video Monitor

1. Apply a cross hatch signal to AV IN jack (or aim the camera at the cross hatch).
2. Using a blank tape, make a recording and play it back.
3. Place the instrument in the "F.Search" mode.
4. Connect TP207 (video out) to 75 ohm terminated oscilloscope.
5. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the main circuit board.)
6. Set the oscilloscope to (-) slope and adjust RT603 so that the leading edge of the SW 25Hz signal is place 225µsec ± 15µsec before the start of added vertical sync. (See Fig. 4-104)
7. Confirm vertical jitter in the picture issuppressed. If it is not suppressed, adjust RT603 to suppress vertical jitter.

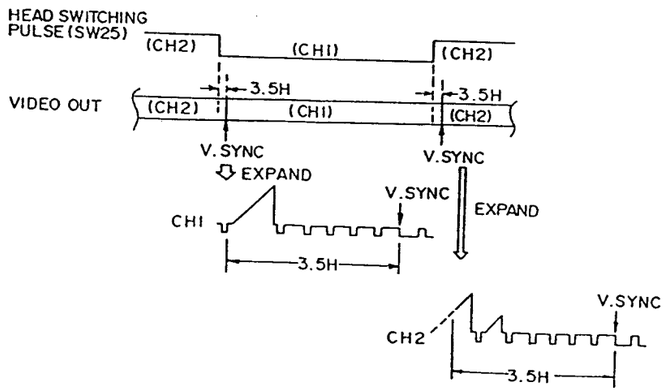


Fig. 4-104 Add Vertical Sync Adjustment

2) Tracking Preset Adjustment
(Figs. 4-105, 4-151)

This adjustment is performed to obtain correct tracking during playback of a tape recorded on the same instrument. When this adjustment is incomplete, noise may conspicuous with the tracking control placed in the detent position or noise may not be removed by the tracking control.

Test Point:	TP207 (Video Out)	Main
	TP601 (CTL)	Main
Adjust:		
	RT602 (TRACKING PRESET)	Main
Observe:	Oscilloscope	

1. Set the TRACKING control located on the left side to the mechanical centre (centre click) position.
2. Apply a colour bar signal to the AV IN jack (or aim the camera at the colour bar chart).
3. Using a blank tape, make a recording and play it back.
4. Connect the channel-1 scope probe to TP207 (Video Out). (0.5V/div.)
5. Connect the channel-2 oscilloscope probe to TP601. (1V/div.; 5ms/div.)
6. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the main circuit board.)
7. Set the oscilloscope to the (-) slope.
8. Adjust RT602 so that the CTL pulse and vertical sync back porch of the video signal match.

3) Head Switching Point Adjustment
(Figs. 4-106, 4-151)

The pulse generator shifter determines the video head switching point during playback.
Misadjustment of pulse generator Shifter may cause head switching noise in the picture and/or vertical instability.

Test Point:	TP207 (Video Out)	Main
Adjust:	RT601 (PG SHIFTER)	Main
Observe:	Oscilloscope	

1. Load the instrument with an alignment tape and play it back the colour bar signal.
2. Connect the oscilloscope to TP207 (VIDEO OUT). (0.5V/div.; 50μs/div.)
3. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the main circuit board.)
4. Set the oscilloscope to (-) slope and adjust RT601 so that the trailing edge of the SW 25Hz signal is placed 6.5H ± 0.5H (horizontal) lines before the start of CH-1 vertical sync.
5. Set the oscilloscope to (+) slope and confirm the leading edge of the SW 25Hz signal is 6.5H ± 0.5H (horizontal) lines before the start of CH-2 vertical sync.

Note: The waveform of CH-1 and CH-2 video signals in the diagram may be opposite depending on the alignment tape.

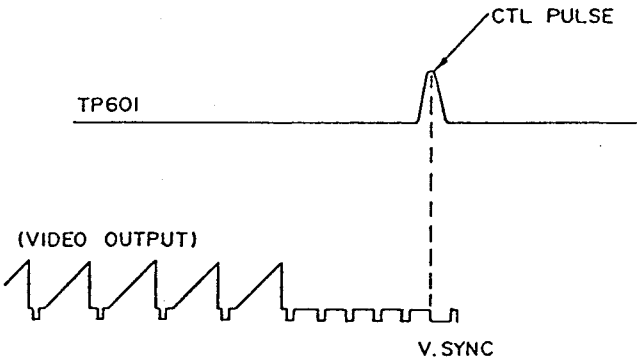


Fig. 4-105 Tracking Preset Adjustment

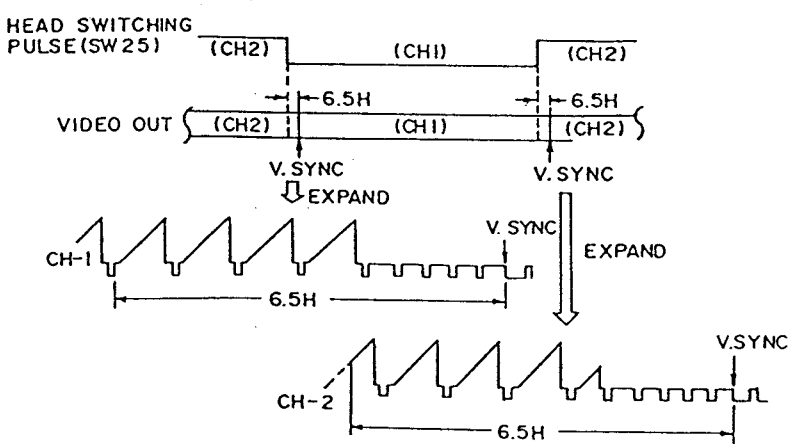


Fig. 4-106 Head Switching Point Adjustment

3-7. LUMA/CHROMA SECTION

1) Record Luma/Chroma Level Adjustment
(Figs. 4-107, 4-151)

Optimum record colour level is regulated by this adjustment.
If the record chroma level is too high, diamond beats can be seen in the screen.
If the levels is too low, the colour is degraded.

Test Point: TP201 Main
Adjust:
RT201 (REC CHROMA LEVEL) Main
RT202 (REC LUMA LEVEL) Main
Observe: Oscilloscope

1. Apply a colour bar signal in Y/C separator to the S VIDEO IN jack (or aim the camera at the colour bar chart).
2. Adjust the input colour bar signal level for 1Vp-p (Y), 0.3Vp-p (C) measured at S VIDEO IN jack.
3. Connect the oscilloscope to TP201. (50mV/2msec.cm) (Ground the shield cover of the luma/chroma section).
4. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the main circuit board.)
5. Set the CAM./VIDEO switch to the CAM. position.
6. Set the S-VHS switch to the S-VHS position.
7. Load the instrument with a blank tape (Use S-VHS tape).
8. Place the instrument in the "Record" mode.
9. Turn RT202 fully counterclockwise.
10. Adjust RT201 so that the record chroma level is 30mVp-p ± 5mV. (See Fig. 4-107)
11. Adjust RT202 so that the record luma level is 140mV ± 10mV. (See Fig. 4-108)

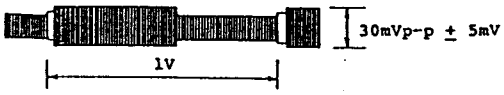


Fig. 4-107 Record Luma/Chroma Level Adjustment

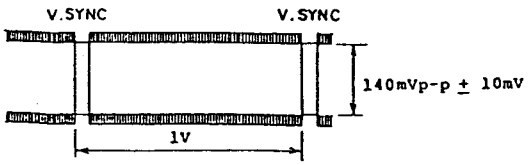


Fig. 4-108 Record Luma/Chroma Level Adjustment

2) 1H Delay Line Output Level Adjustment
(Figs. 4-109, 4-151)

This adjustmentmakes the input and output levels of the 1H delay line the same.
If this adjustment is incomplete, switching noise is conspicuous when dropout is compensated.

Test Point: TP208 Main
Adjust:
RT203 Main
(1H DELAY LINE OUTPUT LEVEL)
Observe: Oscilloscope

1. Load the instrument with an alignment tape and play colour bar signal.
2. Connect the oscilloscope to TP208. (0.2V/div.; 2ms/div.)
3. Trigger the oscilloscope at SW 25Hz. (Use TP202 on the main circuit board.)
4. Adjust RT202 to minimize the noise at the waveform.

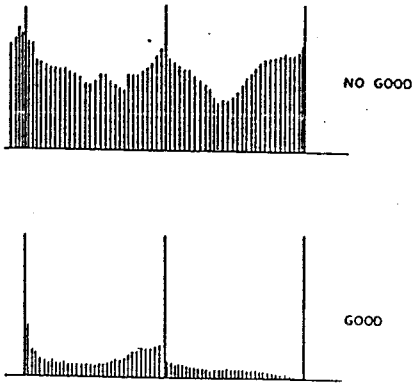


Fig. 4-109 1H Delay Line Output Level Adjustment

3-8. AUDIO SECTION

1) Audio Playback Gain Adjustment
(Fig. 4-151)

This adjustment sets the output level of the audio signal to the specified level.

Test Points: AUDIO OUTPUT
AUDIO GND
Adjust: RT401 (AUDIO PB GAIN) Main
Observe: Millivoltmeter

1. Connect the millivoltmeter to audio out. (Ground the AUDIO GND)
2. Set the CAM./VIDEO switch to the VIDEO position.
3. Load the instrument with an alignment tape and play back the 1kHz audio signal.
4. Adjust RT401 for 315mVrms ± 5mVrms.

CHEMATIC DIAGRAMS AND CIRCUIT BOARD DIAGRAMS
HEN USING THIS SERVICE REFERENCE MATERIAL

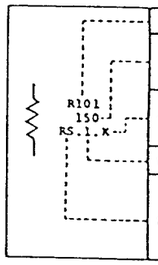
How to Read Abbreviations

te:

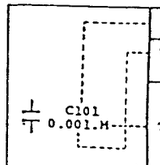
) Voltages measured with the negative side of the power supply as reference:
The voltages in the CAMERA section are measured when the VTR is in the record modes.
The voltages in the VTR section are measured in the record and play modes.
The voltages in parentheses are measured in the record mode.
The single voltages are common in the record and play modes.

) Nomenclature of Resistors and Capacitors.

) Be sure to make your orders of resistors and capacitors with value, voltage, tolerance and sort.



	Circuit No.
Value	No indicated (Ohm) K: 1000 M: 1000k
Tolerance	No indicated +5% K: +10% M: +20%
Wattage	No indicated 1/4 W
Sort	No indicated Carbon film RC Composition RW Wire wound RS Oxide metal film RN Fixed metal film



		Circuit No.
Value		No indicated μF P PF
Tolerance		No indicated +10% J +5% M +20% Z +80%, 20% D +0.5pF C +0.25pF
Sort		
	Ceramic	
	Electrolitic	
	Mylar	
	Polyester	
	Styrol	
Voltage		No indicated 50

Cautions on Use of MOS IC

The MOS IC is inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during their storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.

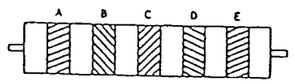
(2) High voltages may be applied during soldering caused by leakages from the soldering iron, so be sure to ground the tip of the soldering iron or use a low voltage soldering iron.

(3) The human body, clothes made of synthetic fibres or nylon gloves may be charge with several thousands volts of static electricity because of friction, so a workers should be grounded.

(4) Be sure to ground measuring instruments such as oscilloscopes, VTVMs, etc. used for repairs.

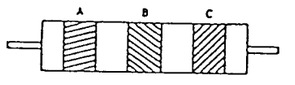
3. How to Read Capacity and Inductance of Resistor Shape Chapacitors and Coils

CAPACITOR



CAPACITY: (10A+B)xC (pF)
TOLERANCE: D
RATED VOLTAGE: BODY COLOR
Pink: 25V
Green: 50V
CHARACTERISTICS: E

COIL



INDUCTANCE: (10A+B)xC (μH)

COLOR	A,B	C	D	E
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6			
Violet	7			
Grey	8		±30%	High dielectric constant type
White	9			For temperature compensation
Gold		10^{-1}	± 5%	
Silver		10^{-2}	±10%	High dielectric constant type

LEADLESS COMPONENT IDENTIFICATION

1. Leadless Transistor

The leadless transistor number is indicated by a code on the surface, using two alphabet letters, one numeral and two alphabet letters or one alphabet letter and one numeral.

(1) Identification for one alphabet letter and one numeral, two alphabet letters or one numeral and two alphabet letters.
Use this code and the following chart for component identification.

Letter	Transistor Number	Letter	Transistor Number
A	2SB709	P	2SD814
B	2SC1621	Q	2SC2620
BR	2SC2412KR(BR)	R	2SC2618
BS	2SC2412KS(BS)	S	2SA1121
C	2SC1122	U	2SC2404
CR	2SB710R(CR)	WQ	2SK322Q(WQ)
CQ	2SC2412KQ(CQ)	W	2SD602
D	2SC2463	X	2SK157
E	2SA1022	Y	2SD601
F	2SC2619	1F	2SK321
FR	2SA1037KR(FR)	1M	2SA1052
H	2SC1036K	1K	2SK316
I	2SB792	2B	2SK374
K	2SK160	13	DTA143K
L	2SC2462	15	DTA124K
L(6)	2SC1623(6)(L6)	25	DTC124K
M	2SA1052	26	DTC144K
N	2SC1653		

Example:

Code	Number
CD	2SA1122D
LD	2SC2462D

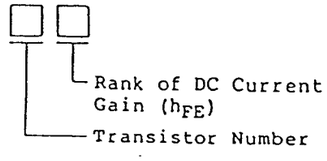


Fig.5-1 Leadless Transistor Code

(2) Identification for one alphabet letter and one numeral.
Use this code and the following chart for component identification.

Letter	Transistor Number
L	2SC1623

Example:

Code	Number
L5	2SC1623(5)
L6	2SC1623(6)

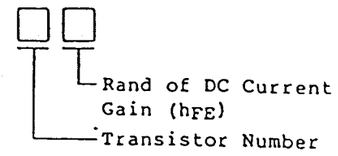


Fig.5-2 Leadless Transistor Code

2. Leadless Diode

The leadless diode number is indicated by a code on the surface, using one alphabet letter and one numeral, two alphabet letters, two alphabet letters and one numeral, two numerals, two numerals and one alphabet letter or three numerals.
Use this code and the following chart for component identification.

Code	Diode Number	Code	Diode Number
C1	HSM88S		
MC	MA153	MH	MA151K
MN	MA151WA	MO	MA152WA
MT	MA151WK	MU	MA152WK
M1D	MA160		
NT	DAN202K		
S1A	1SR143		
6.8	MA3068	56M	MA3056M
6.8M	MA3068M	75L	MA3075L
9.1	MA3091	82M	MA3082M
		91M	MA3091M
272	D2.7M-B2	362	D3.6M-B2
27	RD2.7M-B	512	RD5.1M-B2
30	RD3.0M-B	621	RD6.2M-B1
56	RD5.6M-B	683	RD6.8M-B3
91	RD9.1M-B	102	RD10M-B2
		163	RD16M-B3
		182	RD18M-B2

3. Leadless Resistors

The resistor value is indicated on the surfce of the component, using a three digit number or one alphabet letter and one numeral.

(1) Identification for three digit numbers.
Read this code following the same procedure as when reading the color code on discrete resistors.

2) Audio Bias Level Adjustment
(Fig. 4-151)
This adjustment optimizes the audio record bias.
When the audio record bias is too low, high frequencies are increased resulting in distortion. When the level is too high, high frequencies are attenuated.

Test Points: TP401 Main
TP402 Main
Adjust:
RT402 (AUDIO BIAS LEVEL) Main
Observe: Millivoltmeter

1. Connect the millivoltmeter to TP401. (Ground the TP402 on the audio circuit board).
2. Set the CAM./VIDEO switch to the CAM. position.
3. Load the instrument with a blank tape.
4. Place the instrument in the "Record" mode.
5. Adjust RT402 for 2.4mVrms ± 0.1mVrms.

3-9. CHARACTER GENERATOR CONTROL CIRCUIT BOARD

1) Character Position Adjustment
(Figs. 4-110, 4-152)
This adjustment regulates the horizontal width of the character display on the screen.

Adjust: CT1401 CHARACTER GEN CONT. (CHARACTER POSITION)
Observe: Colour Video Monitor

1. Press the "EDIT" ON/OFF button to set the unit to the editing mode.
2. Press the PAGE, DELETE and LOCATION UP buttons simultaneously to delete the 10-page (10 picture) character data.
3. Press the EDIT/ON/OFF button to set the unit to the editing mode again.
4. Turn the CHARACTER dial to display 12 characters on the monitor screen.
5. Load the instrument with an alignment tape and play back the color bar signal.
6. Adjust CT1401 so that the centre of the 12th character on the right edge of the monitor screen is aligned with the border between red and blue. Check that the blanks on the left and right of the monitor screen are approximately the same, and also check that no character comes out of the EVF screen.

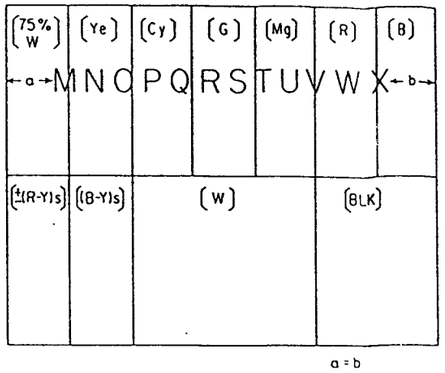


Fig. 4-110 Character Position Adjustment

3-10. ADJUSTMENT PARTS LOCATION

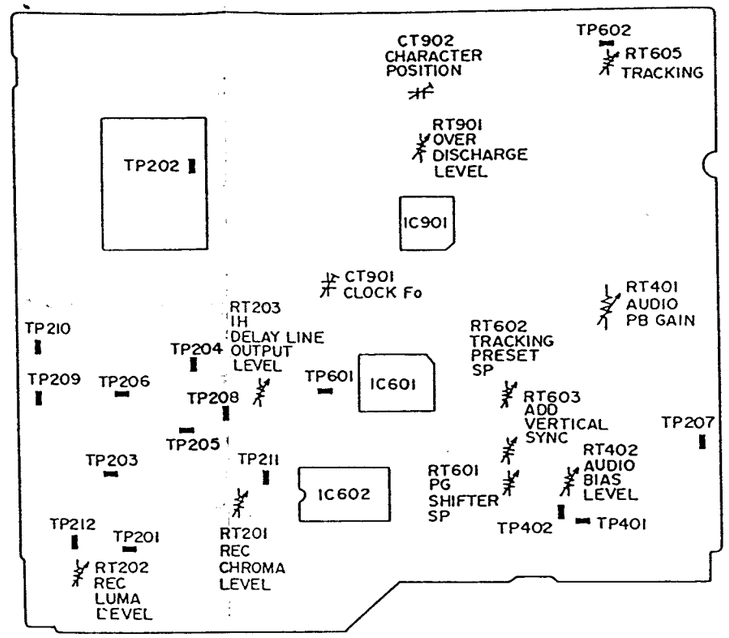


Fig. 4-151 Main Circuit Board
(Solder Side)

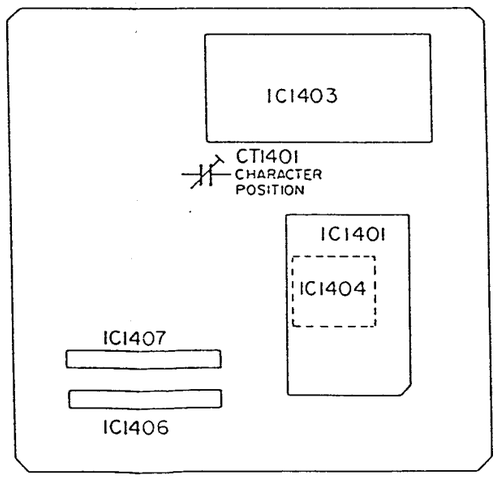


Fig. 4-152 Character Generator Control Circuit Board
(Component Side)

Example:

Code	Value
330	$33 \times 10^0 = 33$ ohms
561	$56 \times 10^1 = 560$ ohms
123	$12 \times 10^3 = 12K$ ohms
1R2	1 + 0.2 = 1.2 ohms (R: Decimal point)

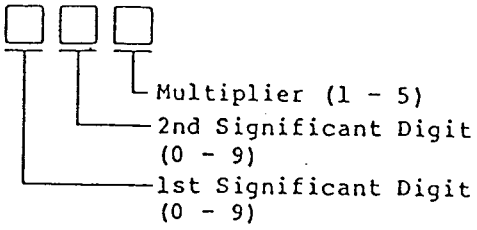


Fig.5-3 Leadless Resistor Code

(2) Identification for one alphabet letter and one numeral.
Use this code and the following chart for component identification.

Letter	Value	Letter	Value
A	1	N	3.3
C	1.2	Q	3.9
E	1.5	S	4.7
G	1.8	U	5.6
J	2.2	W	6.8
L	2.7	Y	8.2

Example:

Code	Value
A1	$1 \times 10^1 = 10$ ohms
G2	$1.8 \times 10^2 = 180$ ohms
L3	$2.7 \times 10^3 = 2700$ ohms
S4	$4.7 \times 10^4 = 47K$ ohms
W5	$6.8 \times 10^5 = 680K$ ohms

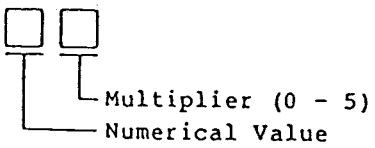
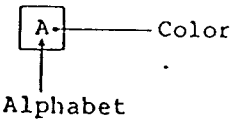


Fig.5-4 Leadless Resistor Code

4. Leadless Capacitors

The capacitive value is indicated on the surface of the component, using body color and one alphabet, or one alphabet and one numeral.

(1) Identification for body color and one alphabet.

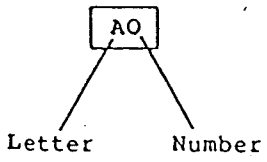


Body Color	Alphabet	Value	Body Color	Alphabet	Value
Red	A	1 (PF)	Blue	A	100 (PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
Black	A	10 (PF)		U	560
	C	12		W	680
	Y	82		Y	820
	E	15	White	A	0.001 (μF)
	G	18		E	0.0015
	J	22		J	0.0022
	L	27		L	0.0027
	N	33		N	0.0033
	Q	39		S	0.0047
	S	47		W	0.0068
	U	56	Green	A	0.01 (μF)
	W	68		E	0.015
	Y	82		J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082
			Yellow	A	0.1 (μF)

Example:

Color	Code	Value
Red	A	1PF
Black	A	10PF

(2) Identification for one alphabet and one numeral.



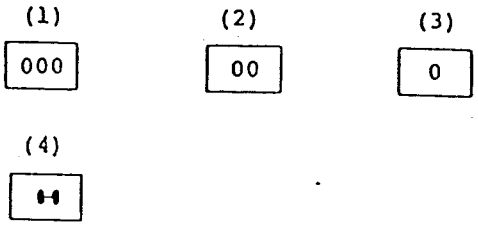
Letter /Number	Value	Letter /Number	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
		U2	560
A1	10(PF)	W2	680
C1	12	Y2	820
E1	15		
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56		
W1	68	A4	0.01(μF)
Y1	82	E4	0.015
		J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1(μF)

Example:

Letter /Number	Value
A0	1PF
A1	10PF

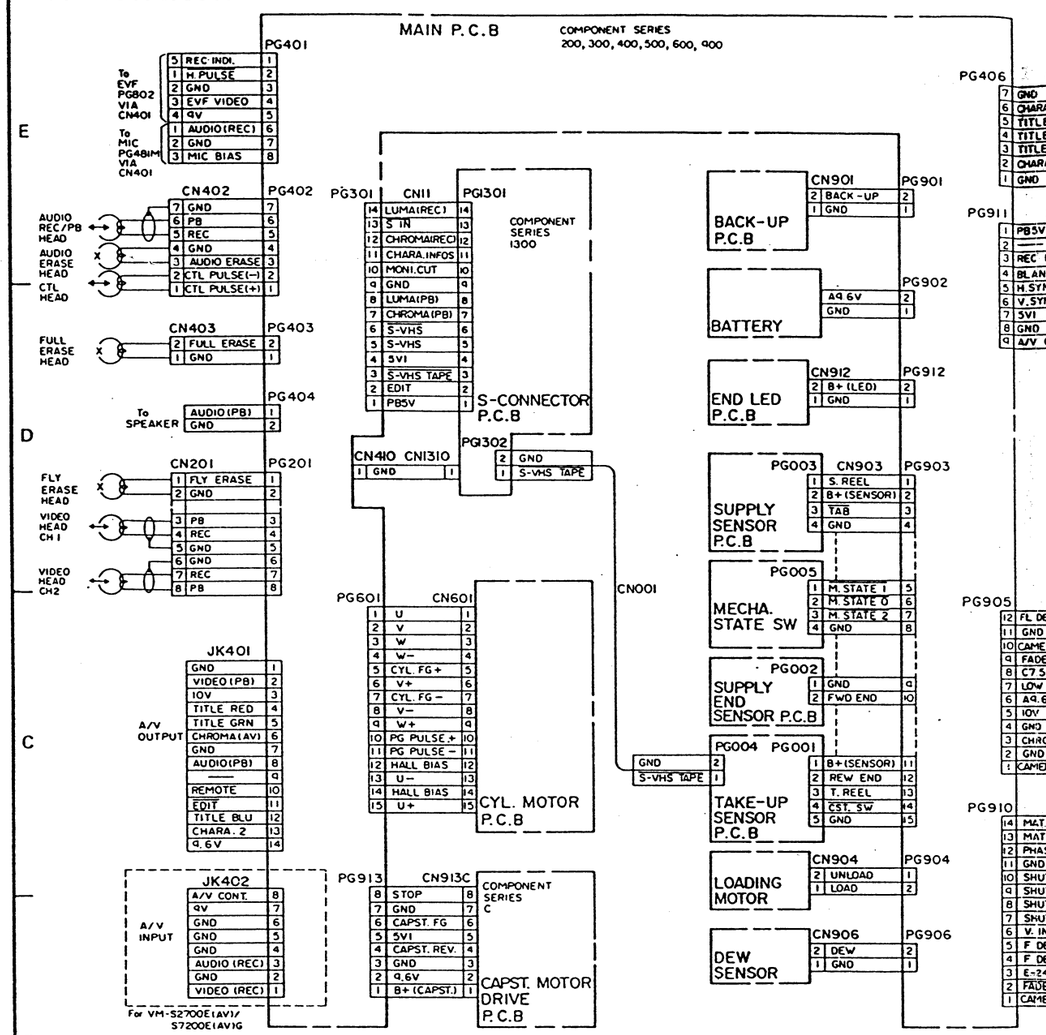
5. Leadless Jumper

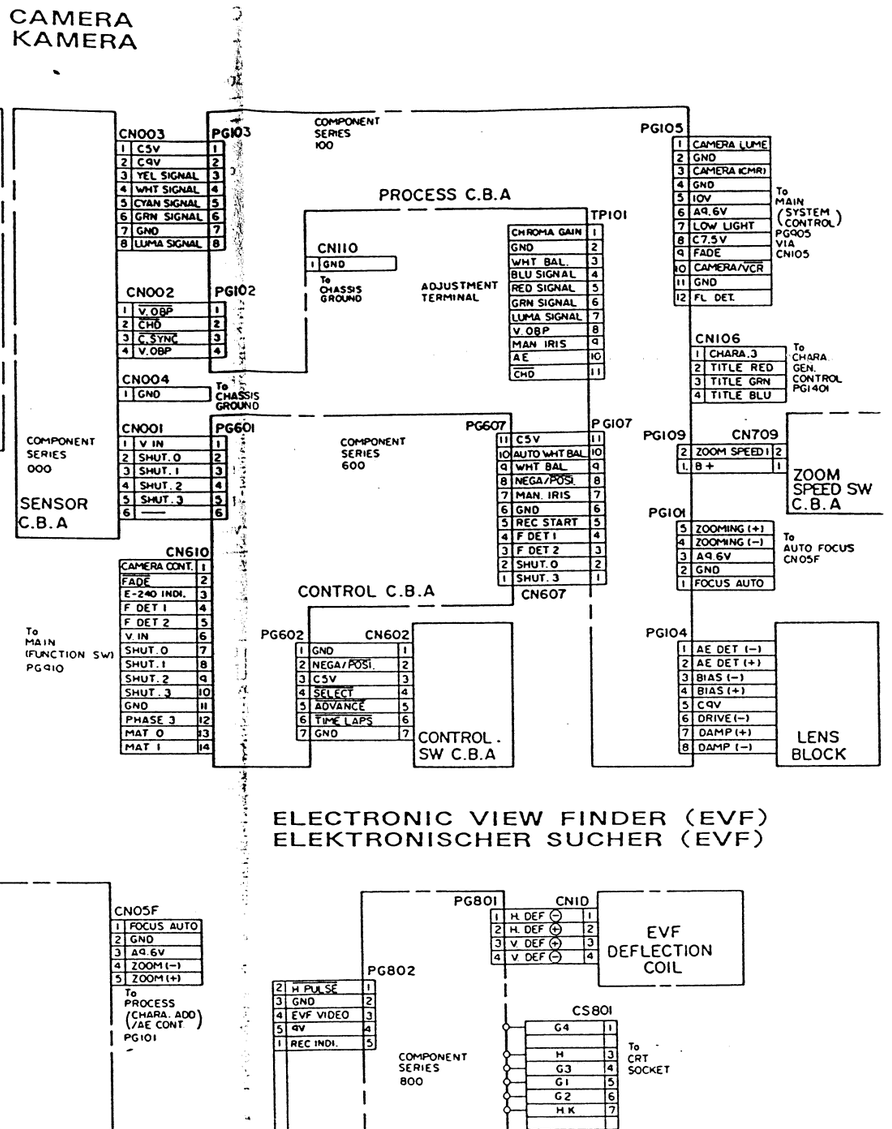
The leadless jumper is indicated as shown below.

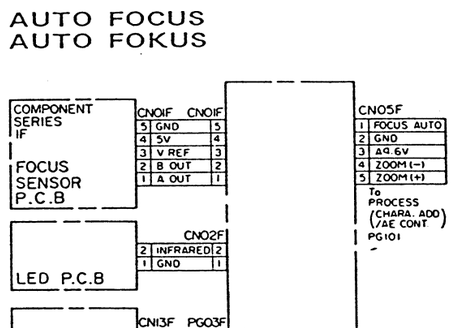


CIRCUIT BOARD CONNECTION DIAGRAMS
LEITERPLATTEN-ANSCHLUßDIAGRAMM

VTR
VIDEOREKORDER

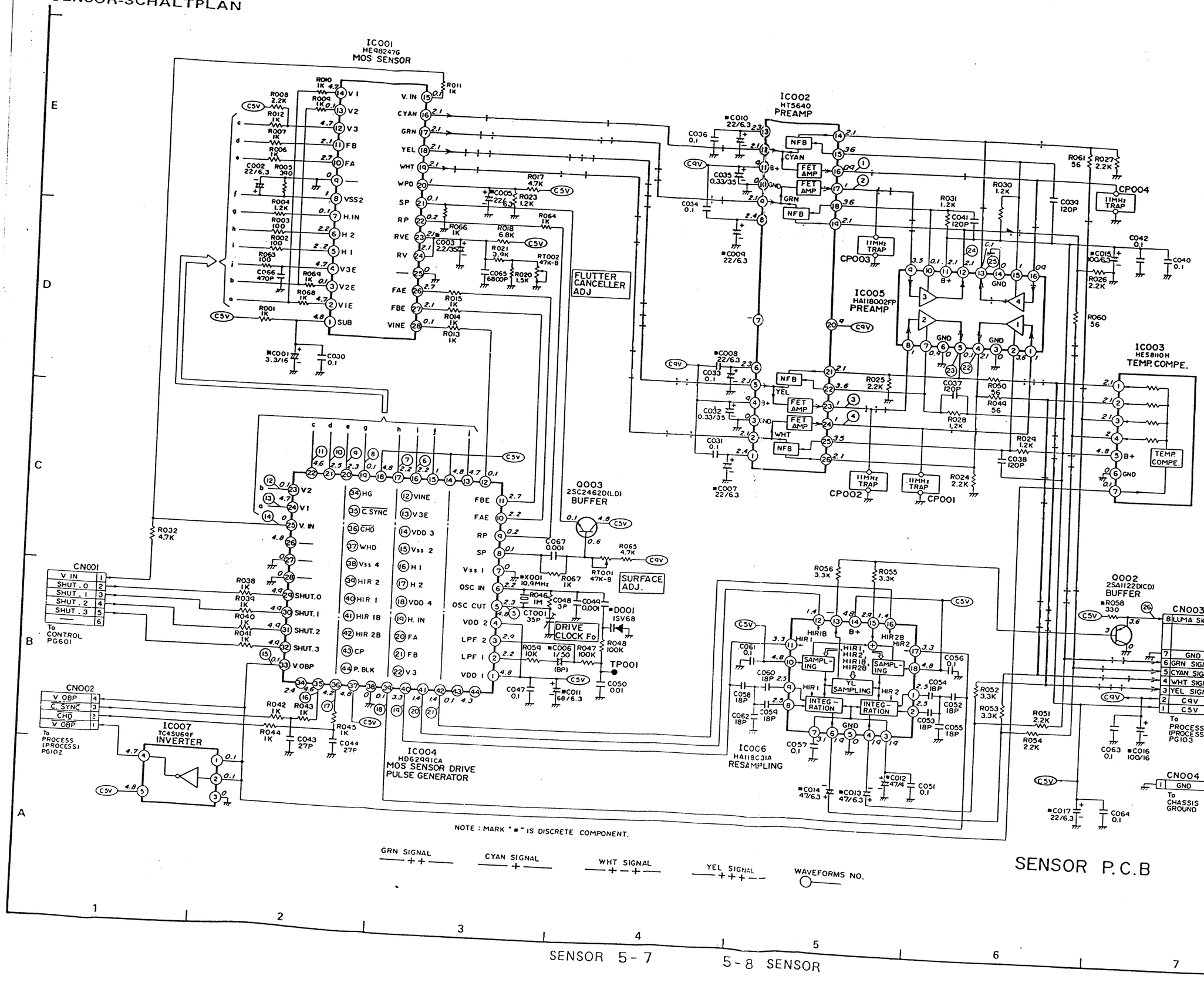




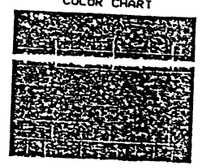


SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5 – 2 1
AUDIO	5 – 2 9
CAPSTAN MOTOR DRIVE	5 – 4 3
CCD 1H DELAY	5 – 3 5
CHARA · ADD/AE CONTROL	5 – 1 5
CHARACTER GEN. CONTROL	5 – 4 5
CHARACTER GEN. FUNCTION SW	5 – 4 5
CONTROL	5 – 1 7
CONTORL SW · SELF TIMER	5 – 1 7
CYL. MOTOR DRIVE	5 – 2 7
CHROMA	5 – 3 3
ELECTRONIC VIEW FINDER · INDI	5 – 1 9
FUNCTION SW	5 – 2 8
FOCUS SENSOR	5 – 2 0
LUMINANCE	5 – 3 7
MIC	5 – 4 3
PB../REC. EQ	5 – 3 5
PROCESS	5 – 1 1
POWER SUPPLY	5 – 2 2
PRE AMP	5 – 3 1
S-CONNECTOR	5 – 4 7
SENSOR	5 – 7
SWITCHING REGULATOR	5 – 2 2
SYSTEM CONTROL	5 – 2 5
SERVO	5 – 2 3
TROUBLE SENSOR	5 – 3 9

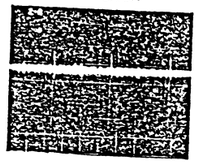
SENSOR SCHEMATIC
SENSOR-SCHALTPLAN



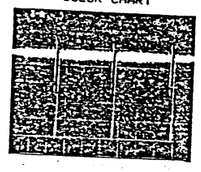
1-A IC002-16 1.1Vp-p
0.2V/20.0μ sec.cm
COLOR CHART



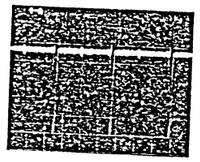
2-A IC002-17 870mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



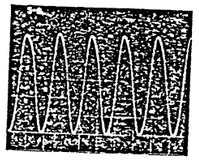
3-A IC002-23 1.1Vp-p
0.2V/20.0μ sec.cm
COLOR CHART



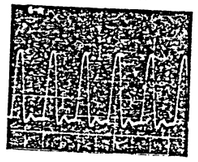
4-A IC002-24 1.0Vp-p
0.2V/20.0μ sec.cm
COLOR CHART



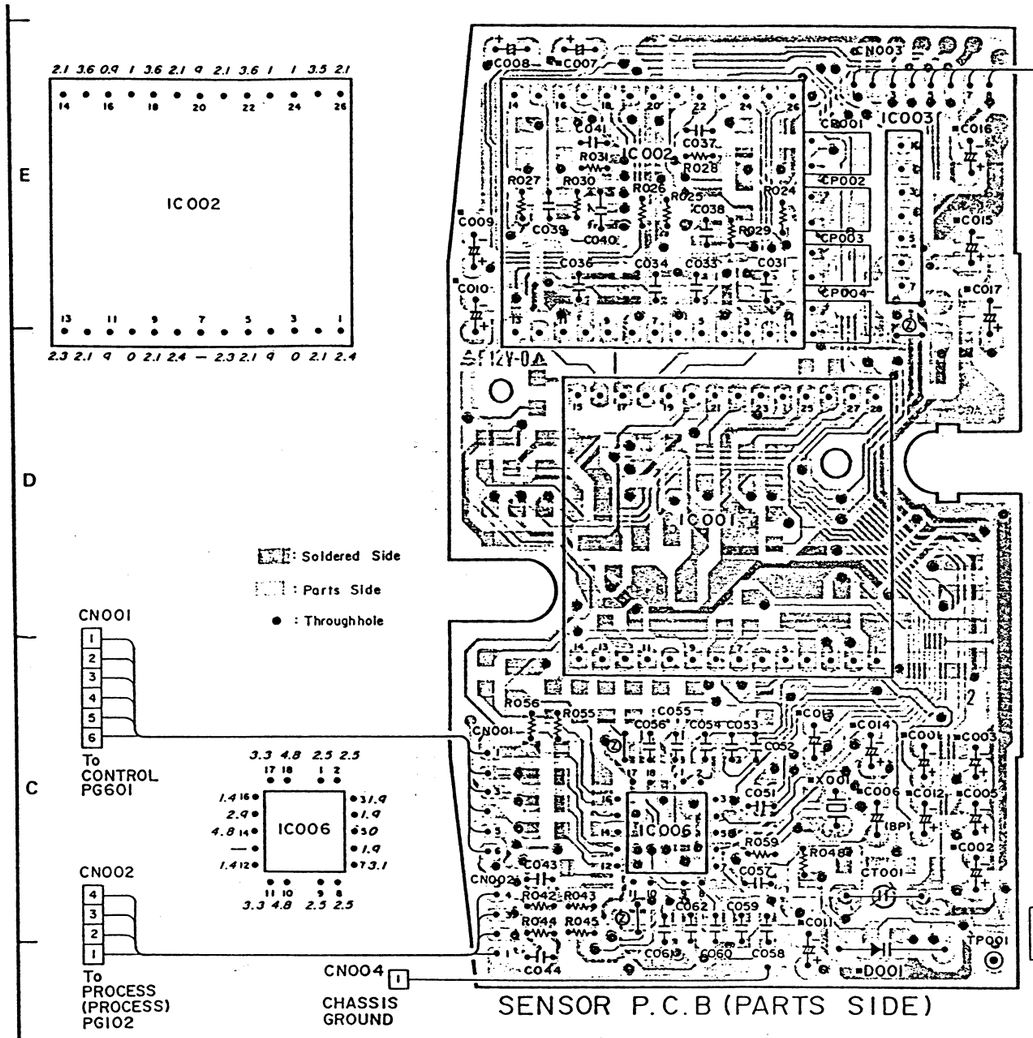
5-A IC004-5 5.5Vp-p
1V/50.0nsec.cm
COLOR CHART



6-A IC004-16 4.1Vp-p
1V/100nsec.cm
COLOR CHART



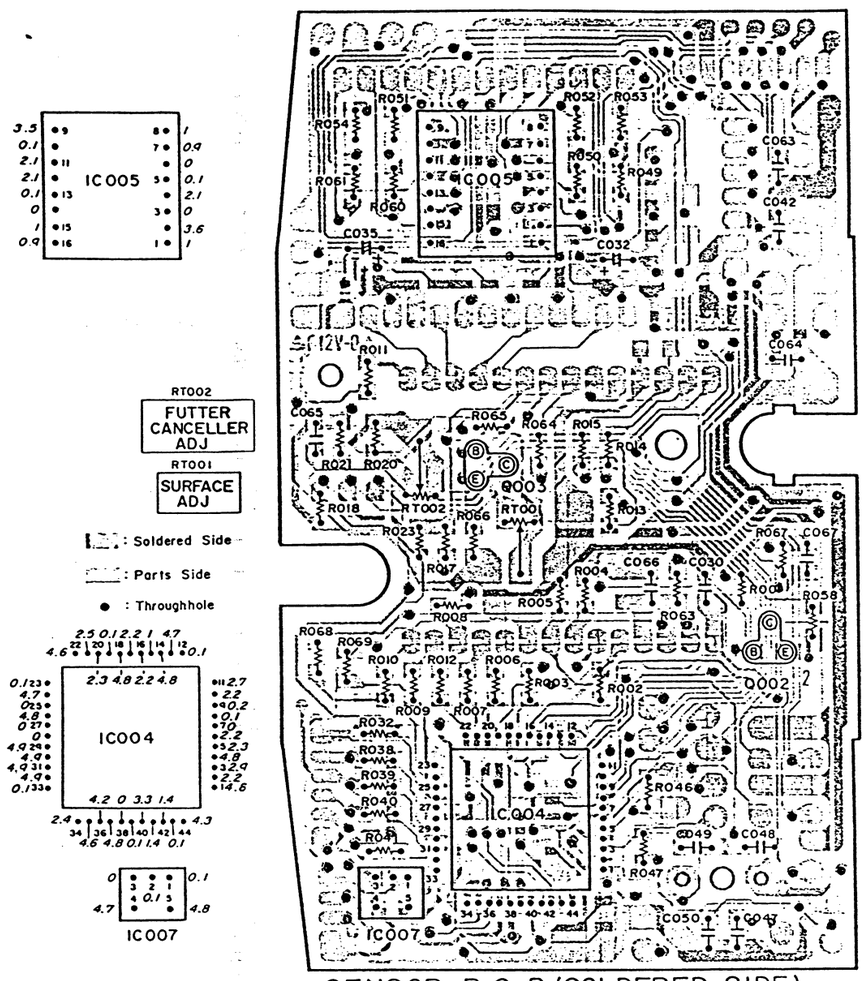
SENSOR CIRCUIT BOARD (PARTS SIDE)
SENSOR-LEITERPLATTE (BESTÜCKUNGSSEITE)



SENSOR P.C.B (PARTS SIDE)

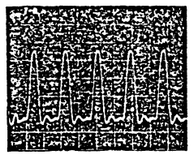
NOTE : MARK "■" IS DISCRETE COMPONENT.
: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

SENSOR CIRCUIT BOARD (SOLDER SIDE)
SENSOR-LEITERPLATTE (LEITERBAHNSEITE)

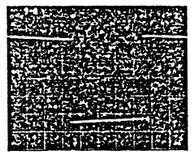


SENSOR P.C.B (SOLDERED SIDE)

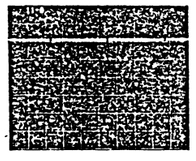
7-A IC004-17 4.1Vp-p 1V/100nsec.cm COLOR CHART



9-A IC004-20 5.0Vp-p 1V/5.0msec.cm COLOR CHART

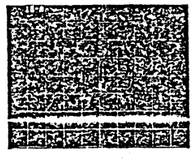


11-A IC004-22 4.8Vp-p 1V/20.0μ sec.cm COLOR CHART

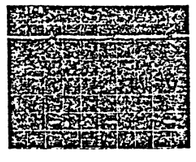


13-A IC004-24 4.8Vp-p 1V/20.0μ sec.cm COLOR CHART

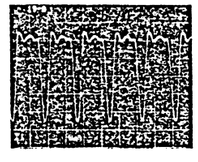
15-A IC004-33 4.6Vp-p 1V/10.0msec.cm COLOR CHART



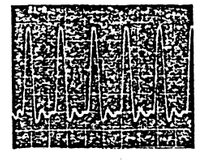
17-A IC004-36 4.9Vp-p 1V/20.0μ sec.cm COLOR CHART



19-A IC004-40 5.0Vp-p 1V/100nsec.cm COLOR CHART

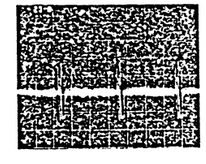


21-A IC004-42 5.3Vp-p 1V/100nsec.cm COLOR CHART



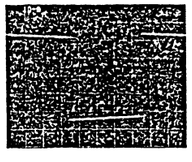
23-A IC005-5 3.3Vp-p 1V/20.0μ sec.cm COLOR CHART

25-A IC005-13 3.3Vp-p 1V/20.0μ sec.cm COLOR CHART

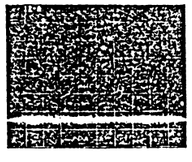


8-A IC004-19 4.8Vp-p 1V/20.0μ sec.cm COLOR CHART

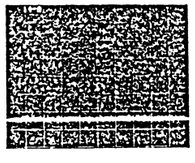
10-A IC004-21 5.0Vp-p 1V/5.0msec.cm COLOR CHART



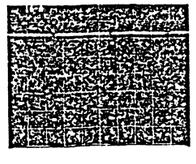
12-A IC004-23 4.8Vp-p 1V/20.0μ sec.cm COLOR CHART



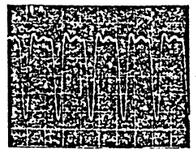
14-A IC004-25 4.8Vp-p 1V/10.0msec.cm COLOR CHART



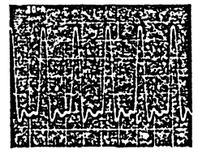
16-A IC004-35 4.9Vp-p 1V/20.0μ sec.cm COLOR CHART



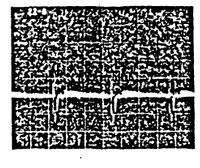
18-A IC004-39 4.9Vp-p 1V/100nsec.cm COLOR CHART



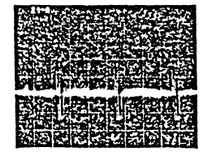
20-A IC004-41 5.3Vp-p 1V/100nsec.cm COLOR CHART



22-A IC005-4 3.3Vp-p 1V/20.0μ sec.cm COLOR CHART

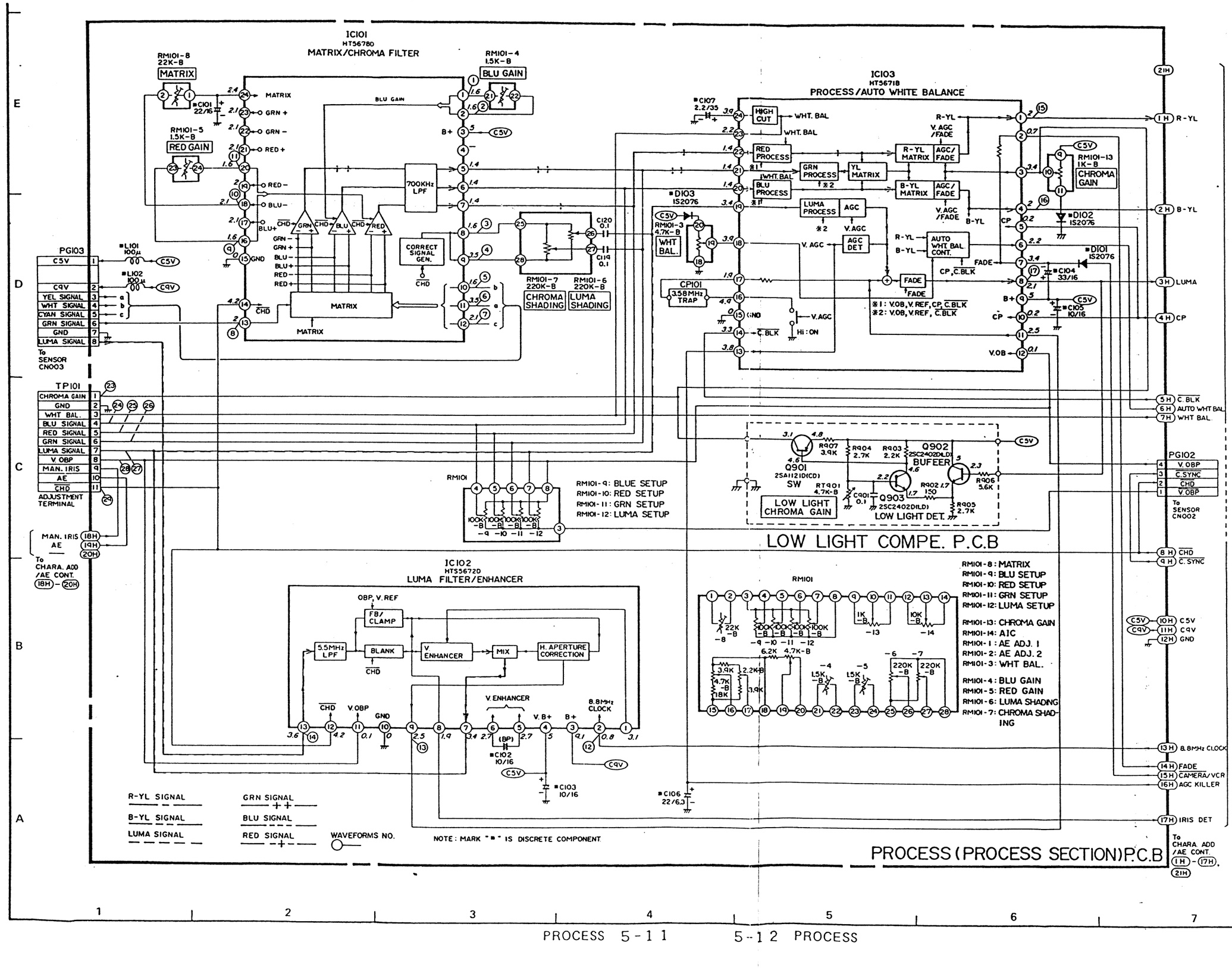


24-A IC005-12 3.3Vp-p 1V/20.0μ sec.cm COLOR CHART

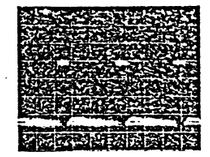


26-A CN003-8 1.3Vp-p 0.5V/20.0μ sec.cm COLOR CHART

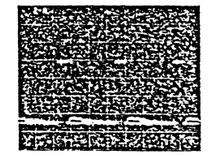
PROCESS (PROCESS SECTION) SCHEMATIC
PROZESS-SCHALTPLAN (PROZESS-ABSCHNITT)



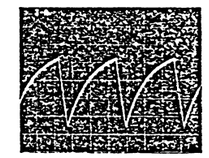
1-A IC101-1 1.7Vp-p 0.5V/20.0μ sec.cm COLOR CHART



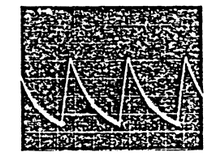
2-A IC101-2 1.7Vp-p 0.5V/20.0μ sec.cm COLOR CHART



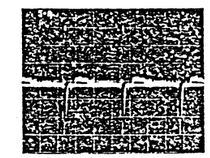
3-A IC101-8 750mVp-p 0.2V/20.0μ sec.cm COLOR CHART



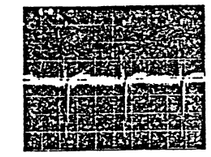
4-A IC101-9 750mVp-p 0.2V/20.0μ sec.cm COLOR CHART



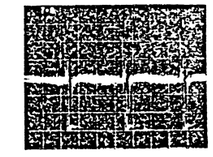
5-A IC101-10 3.0Vp-p 0.5V/20.0μ sec.cm. COLOR CHART



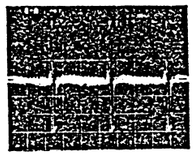
6-A IC101-11 3.1Vp-p 0.5V/20.0μ sec.cm COLOR CHART



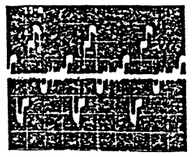
7-A IC101-12 3.0Vp-p 0.5V/20.0μ sec.cm COLOR CHART



8-A IC101-13 3.0Vp-p 0.5V/20.0μ sec.cm COLOR CHART

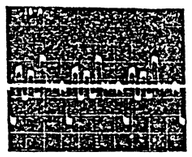


15-A IC103-1 530mVp-p 0.1V/20.0μ sec.cm COLOR CHART

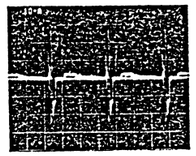


9-A IC101-16 1.8Vp-p 0.5V/20.0μ sec.cm COLOR CHART

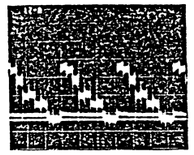
16-A IC103-4 770mVp-p 0.2V/20.0μ sec.cm COLOR CHART



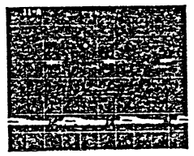
10-A IC101-18 2.6Vp-p 0.5V/20.0μ sec.cm COLOR CHART



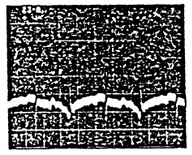
17-A IC103-8 680mVp-p 0.2V/20.0μ sec.cm COLOR CHART



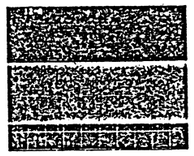
11-A IC101-20 1.8Vp-p 0.5V/20.0μ sec.cm COLOR CHART



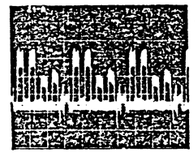
23-A TP101-1 310mVp-p 0.1V/5.0msec.cm COLOR CHART



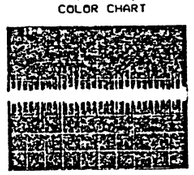
12-A IC102-2 680mVp-p 0.2V/5.0msec.cm COLOR CHART



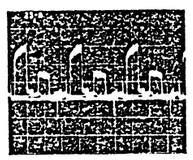
24-A TP101-4 200mVp-p 50mV/20.0μ sec.cm COLOR CHART



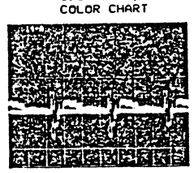
13-A IC102-9 510mVp-p 0.1V/20.0μ sec.cm COLOR CHART



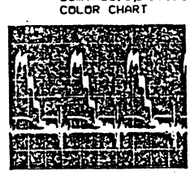
25-A TP101-5 460mVp-p 0.1V/20.0μ sec.cm COLOR CHART



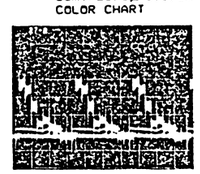
14-A IC102-13 1.4Vp-p 0.5V/20.0μ sec.cm COLOR CHART



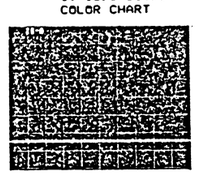
26-A TP101-6 280mVp-p 50mV/20.0μ sec.cm COLOR CHART



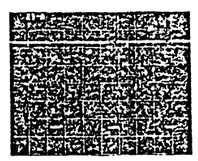
27-A TP101-7 210mVp-p 50mV/20.0μ sec.cm COLOR CHART



28-A TP101-8 4.6Vp-p 1V/10.0msec.cm COLOR CHART

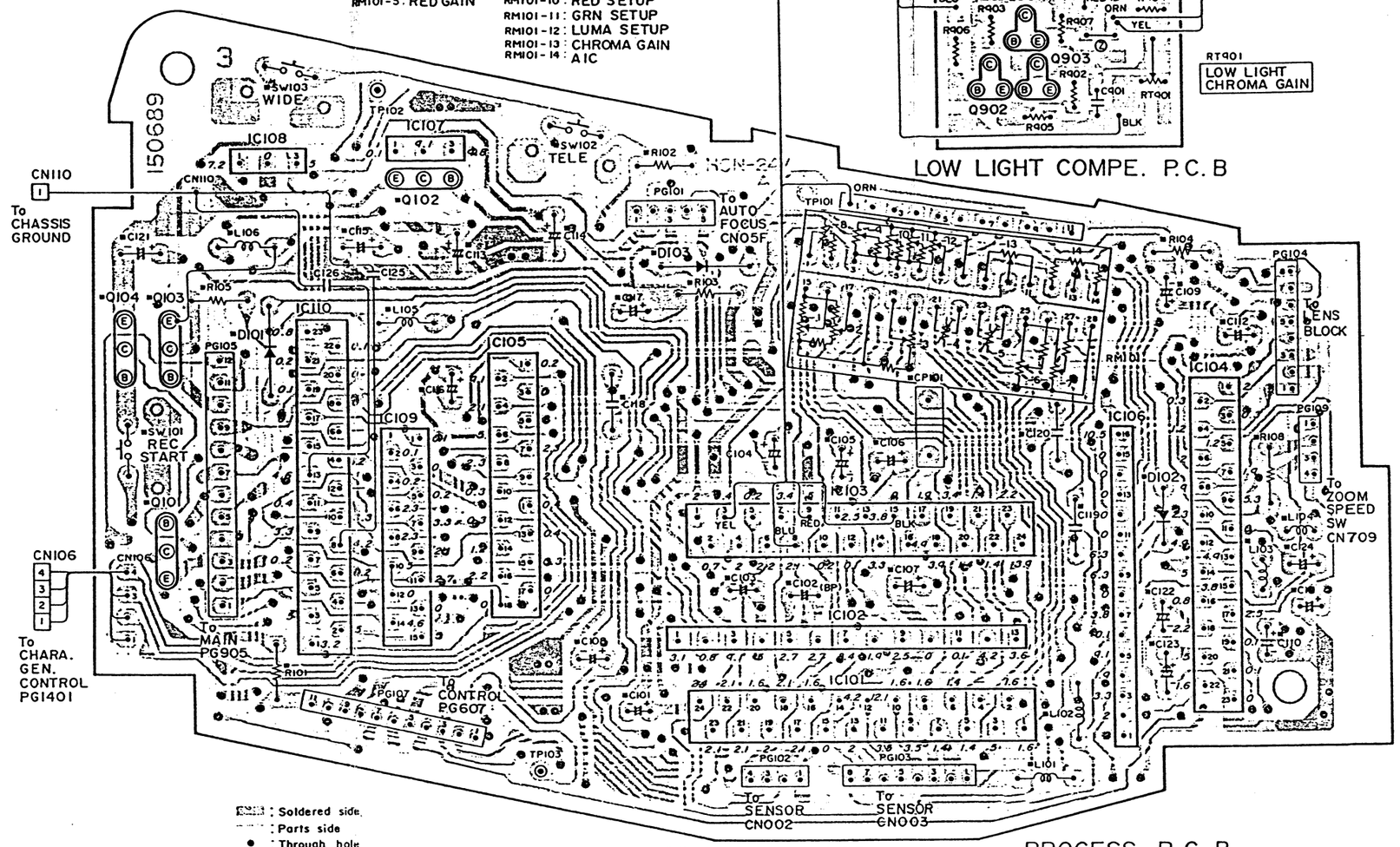


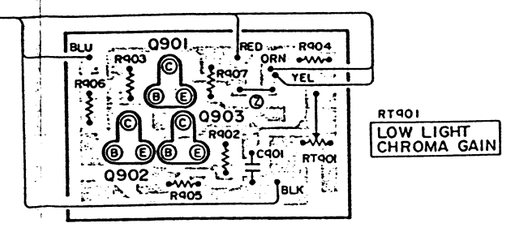
29-A TP101-11 4.9Vp-p 1V/20.0μ sec.cm COLOR CHART



PROCESS, ZOOM SPEED SW, LOW LIGHT COMPE. CIRCUIT BOARD
PROZESS, ZOOMGESCHWINDIGKEITSSCHALTER, UNTERBELICHTUNGSKOMPENSATION-LEITERPLATTE

RM101-1 : AE ADJ. 1
RM101-2 : AE ADJ. 2
RM101-3 : WHT BAL.
RM101-4 : BLU GAIN
RM101-5 : RED GAIN
RM101-6 : LUMA SHADING
RM101-7 : CHROMA SHADING
RM101-8 : MATRIX
RM101-9 : BLU SETUP
RM101-10 : RED SETUP
RM101-11 : GRN SETUP
RM101-12 : LUMA SETUP
RM101-13 : CHROMA GAIN
RM101-14 : AIC

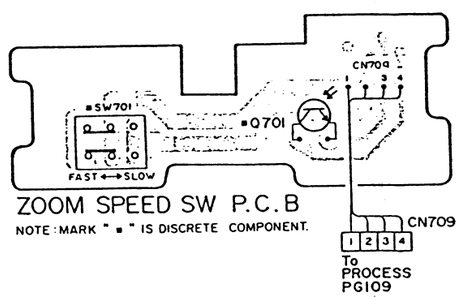




LOW LIGHT COMPE. P.C.B

: Soldered side
: Parts side
● : Through hole

PROCESS P.C.B

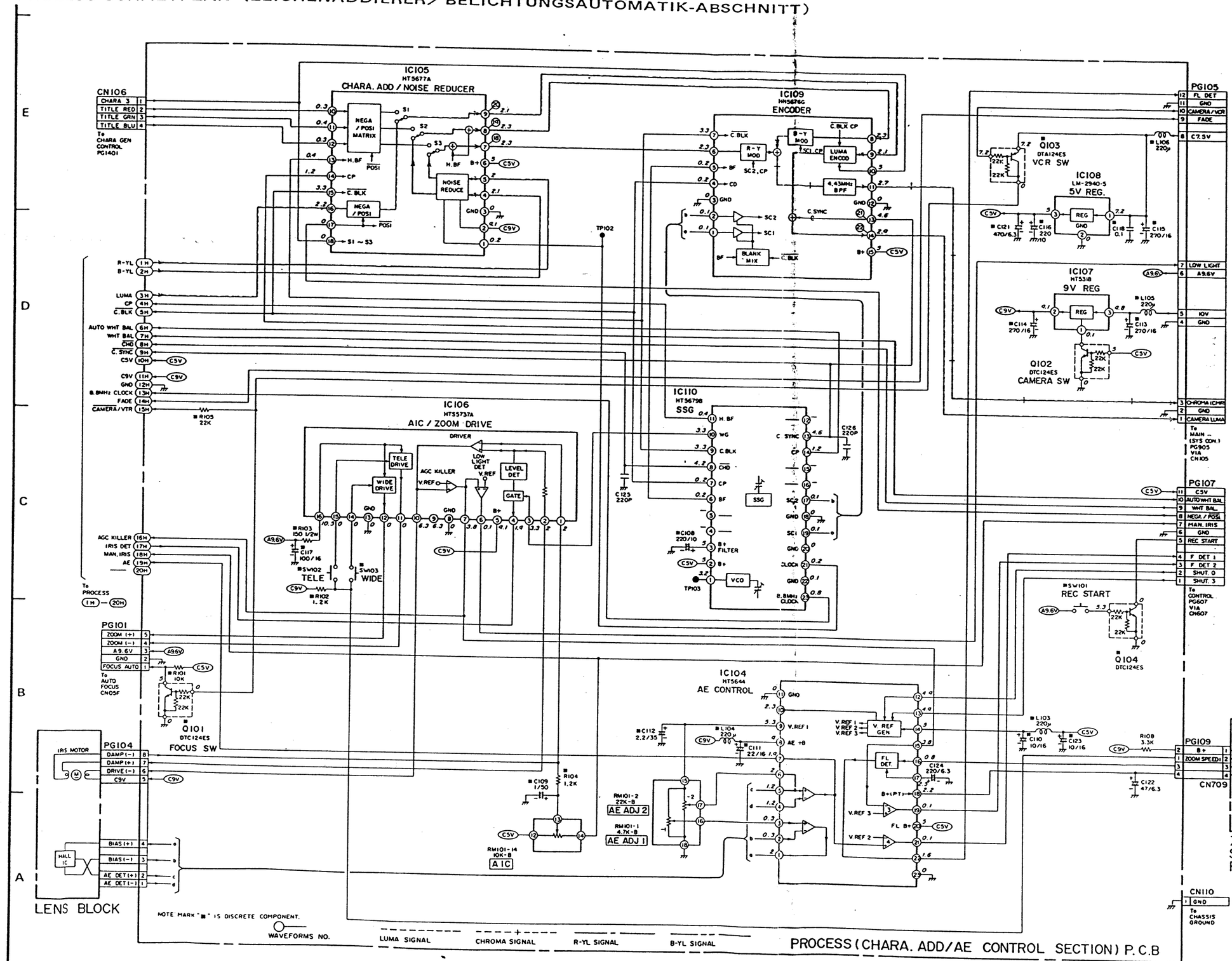


ZOOM SPEED SW P.C.B

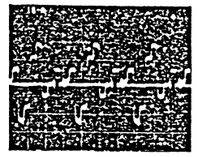
NOTE : MARK " ■ " IS DISCRETE COMPONENT.

SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5-21
AUDIO	5-29
CAPSTAN MOTOR DRIVE	5-43
CCD 1H DELAY	5-35
CHARA · ADD/AE CONTROL	5-15
CHARACTER GEN. CONTROL	5-45
CHARACTER GEN. FUNCTION SW	5-45
CONTROL	5-17
CONTORL SW · SELF TIMER	5-27
CYL. MOTOR DRIVE	5-33
CHROMA	5-19
ELECTRONIC VIEW FINDER · IND	5-28
FUNCTION SW	5-20
FOCUS SENSOR	5-37
LUMINANCE	5-43
MIC	5-35
PB./REC. EQ	5-11
PROCESS	5-22
POWER SUPPLY	5-31
PRE AMP	5-47
S-CONNECTOR	5-7
SENSOR	5-22
SWITCHING REGULATOR	5-25
SYSTEM CONTROL	5-23
SERVO	5-39
TROUBLE SENSOR	

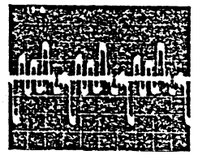
PROCESS (CHARA. ADD/AE CONTROL SECTION) SCHEMATIC
PROZESS-SCHALTPLAN (ZEICHENADDIERER/BELICHTUNGSAUTOMATIK-ABSCHNITT)



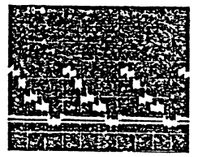
18-A IC105-7 900mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



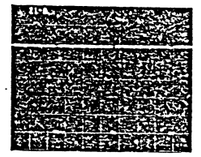
19-A IC105-8 900mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



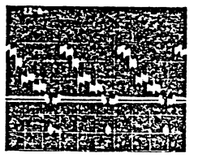
20-A IC105-9 630mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



21-A IC109-13 4.9Vp-p
1V/20.0μ sec.cm
COLOR CHART

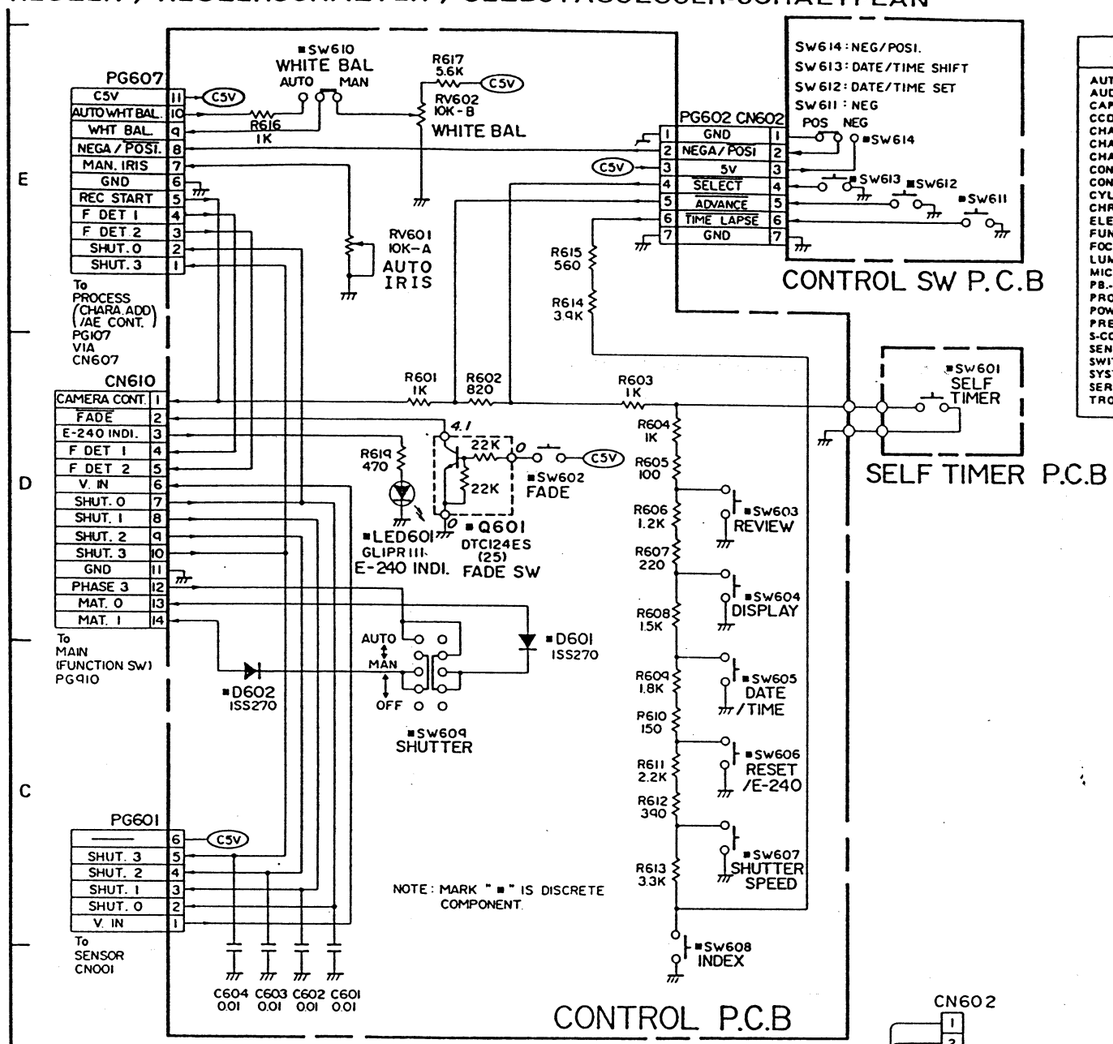


22-A IC109-14 990mVp-p
0.2V/20.0μ sec.cm
COLOR CHART



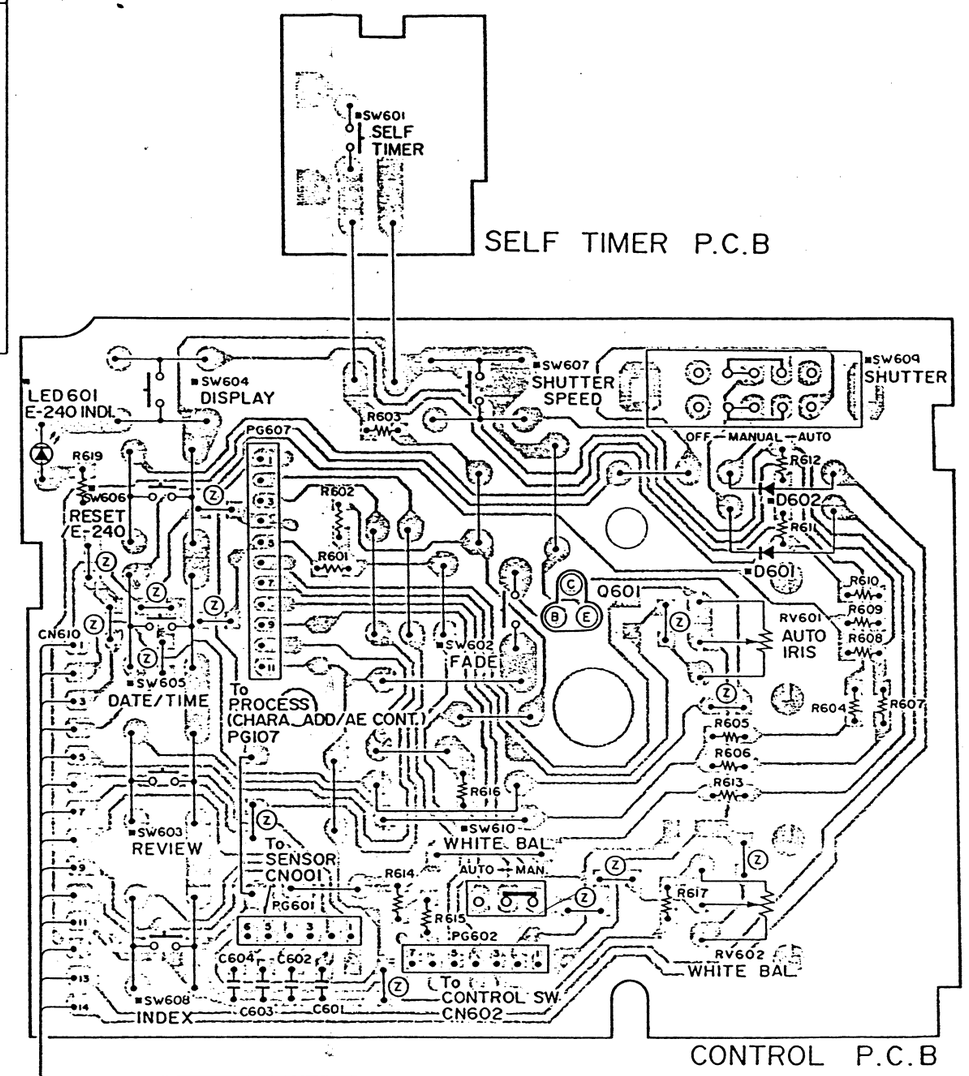
SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5 – 2 1
AUDIO	5 – 2 9
CAPSTAN MOTOR DRIVE	5 – 4 3
CCD 1H DELAY	5 – 3 5
CHARA · ADD/AE CONTROL	5 – 1 5
CHARACTER GEN. CONTROL	5 – 4 5
CHARACTER GEN. FUNCTION SW	5 – 4 5
CONTROL	5 – 1 7
CONTORL SW · SELF TIMER	5 – 1 7
CYL. MOTOR DRIVE	5 – 2 7
CHROMA	5 – 3 3
ELECTRONIC VIEW FINDER · INDI	5 – 1 9
FUNCTION SW	5 – 2 8
FOCUS SENSOR	5 – 2 0
LUMINANCE	5 – 3 7
MIC	5 – 4 3
PB-/REC- EQ	5 – 3 5
PROCESS	5 – 1 1
POWER SUPPLY	5 – 2 2
PRE AMP	5 – 3 1
S-CONNECTOR	5 – 4 7
SENSOR	5 – 7
SWITCHING REGULATOR	5 – 2 2
SYSTEM CONTROL	5 – 2 5
SERVO	5 – 2 3
TROUBLE SENSOR	5 – 3 9

CONTROL, CONTROL SW, SELF TIMER SCHEMATIC
REGLER-, REGLERSCHALTER-, SELBSTAUSLÖSER-SCHALTPLAN

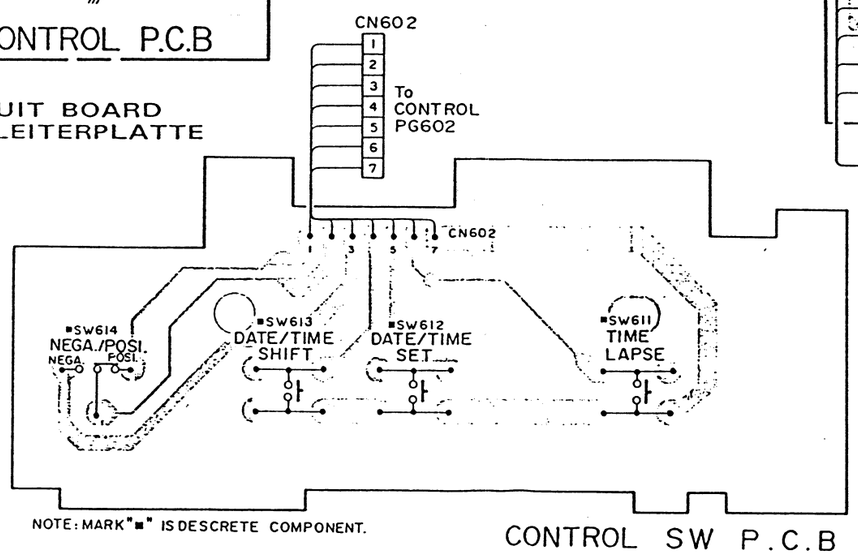


SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5-21
AUDIO	5-29
CAPSTAN MOTOR DRIVE	5-43
CCD 1H DELAY	5-35
CHARA · ADD/AE CONTROL	5-15
CHARACTER GEN. CONTROL	5-45
CHARACTER GEN. FUNCTION SW	5-45
CONTROL	5-17
CONTORL SW · SELF TIMER	5-17
CYL. MOTOR DRIVE	5-27
CHROMA	5-33
ELECTRONIC VIEW FINDER · INDI	5-19
FUNCTION SW	5-28
FOCUS SENSOR	5-20
LUMINANCE	5-37
MIC	5-43
PB-/REC- EQ	5-35
PROCESS	5-11
POWER SUPPLY	5-22
PRE AMP	5-31
S-CONNECTOR	5-47
SENSOR	5-7
SWITCHING REGULATOR	5-22
SYSTEM CONTROL	5-25
SERVO	5-23
TROUBLE SENSOR	5-39

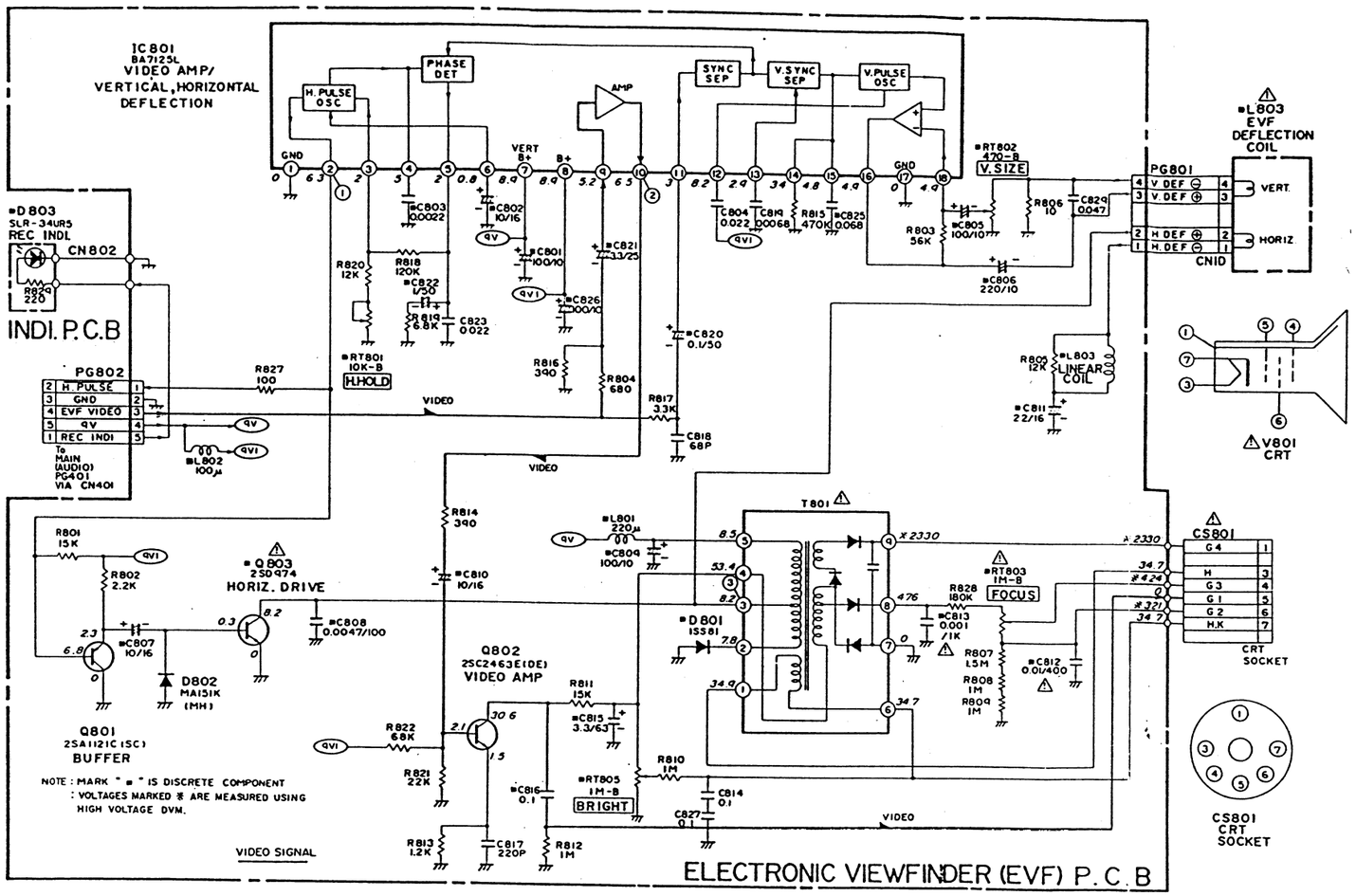
CONTROL, SELF TIMER CIRCUIT BOARD
REGLER-, SELBSTAUSLÖSER-LEITERPLATTE



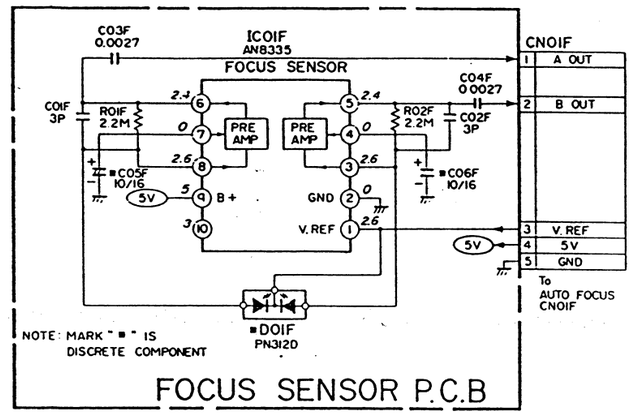
CONTROL SW CIRCUIT BOARD
REGLERSCHALTER-LEITERPLATTE



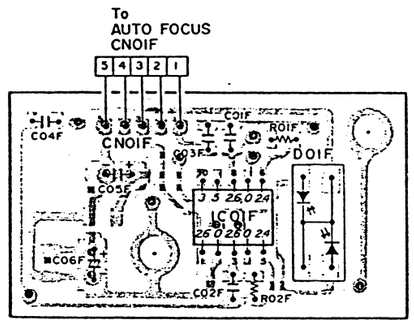
ELECTRONIC VIEW FINDER (EVF), INDI SCHEMATIC
ELEKTRONISCHER SUCHER (EVF)-, ANZEIGEN-SCHALTPLAN



FOCUS SENSOR SCHEMATIC
FOKUSSIERREGELUNG-SCHALTPLAN



FOCUS SENSOR CIRCUIT BOARD
FOKUSSIERREGELUNG-LEITERPLATTE

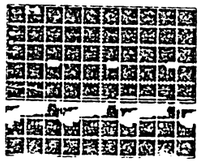


NOTE: MARK " ■ " IS DISCRETE COMPONENT.

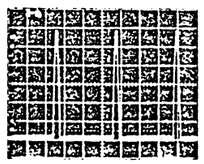
Soldered side
: Parts side
● Through hole

1-A IC801-2 7.0Vp-p
2V/20.0μ sec. cm
COLOR CHART

2-A IC801-10 1.7Vp-p
0.5V/20.0μ sec. cm
COLOR CHART

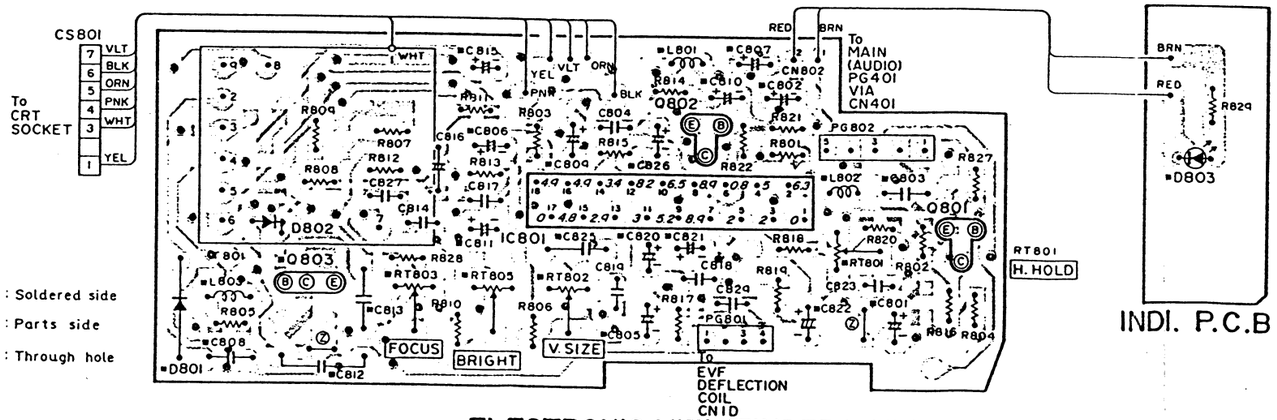


3-A T801-3 120Vp-p
20V/20.0μ sec. cm
COLOR CHART



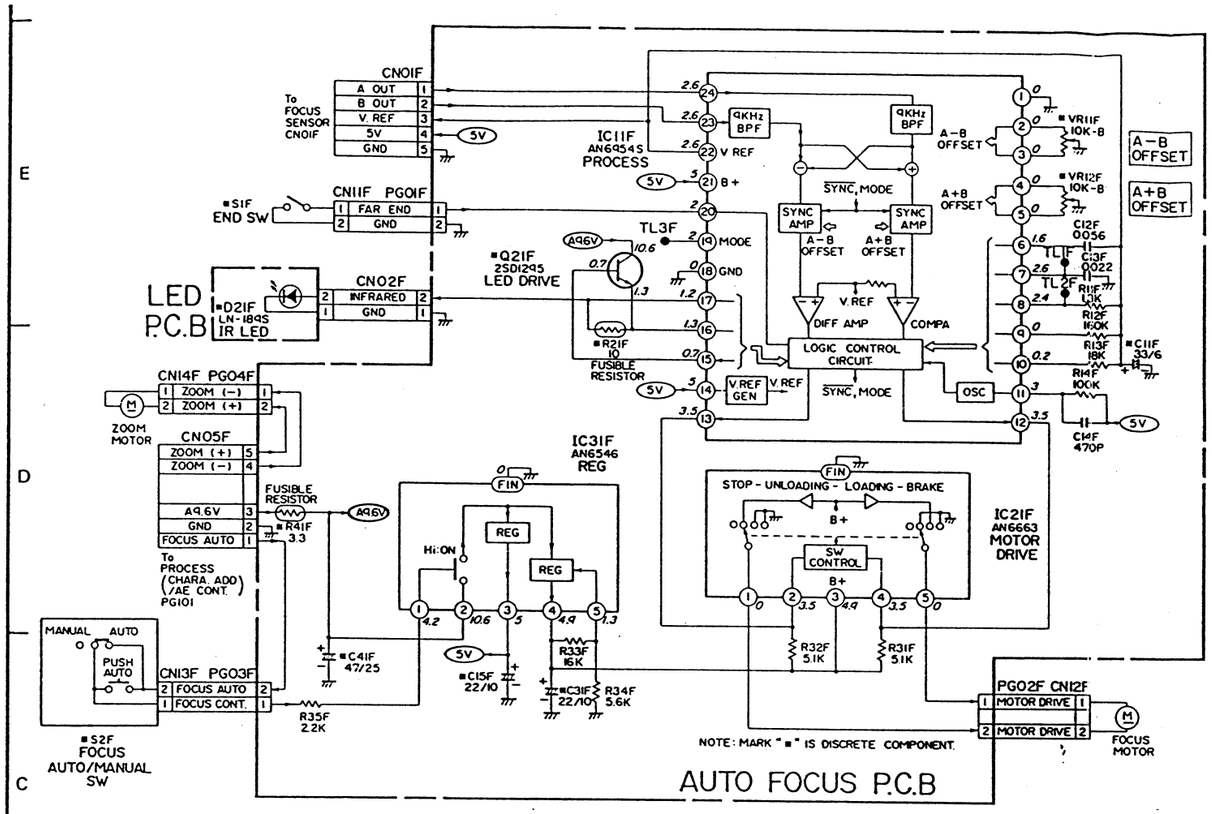
SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS・LED	5-21
AUDIO	5-29
CAPSTAN MOTOR DRIVE	5-43
CCD 1H DELAY	5-35
CHARA・ADD./AE CONTROL	5-15
CHARACTER GEN. CONTROL	5-45
CHARACTER GEN. FUNCTION SW	5-45
CONTROL	5-17
CONTORL SW・SELF TIMER	5-17
CYL. MOTOR DRIVE	5-27
CHROMA	5-33
ELECTRONIC VIEW FINDER・INDI	5-19
FUNCTION SW	5-28
FOCUS SENSOR	5-20
LUMINANCE	5-37
MIC	5-43
PB./REC. EQ	5-35
PROCESS	5-11
POWER SUPPLY	5-22
PRE AMP	5-31
S-CONNECTOR	5-47
SENSOR	5-7
SWITCHING REGULATOR	5-22
SYSTEM CONTROL	5-25
SERVO	5-23
TROUBLE SENSOR	5-39

ELECTRONIC VIEW FINDER (EVF), INDI. CIRCUIT BOARD
ELEKTRONISCHER SUCHER (EVF)-, ANZEIGEN-LEITERPLATTE

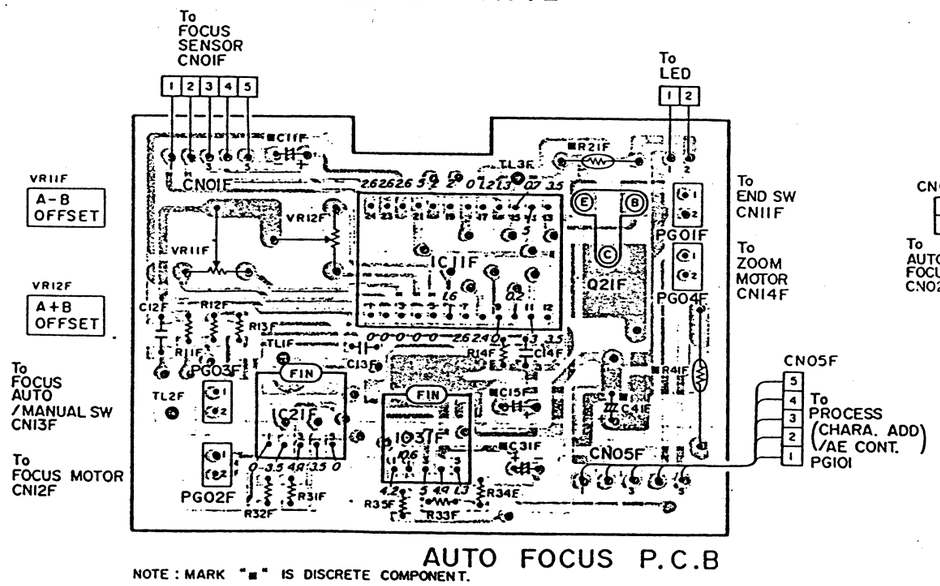


NOTE: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.
: MARK " ■ " IS DISCRETE COMPONENT.

AUTO FOCUS, LED SCHEMATIC
AUTO FOKUS-, LED-SCHALTPLAN

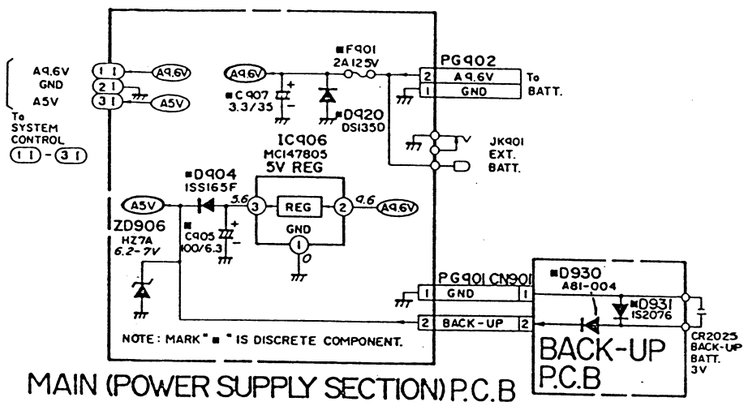


AUTO FOCUS, LED CIRCUIT BOARD
AUTO FOKUS-, LED-LEITERPLATTE

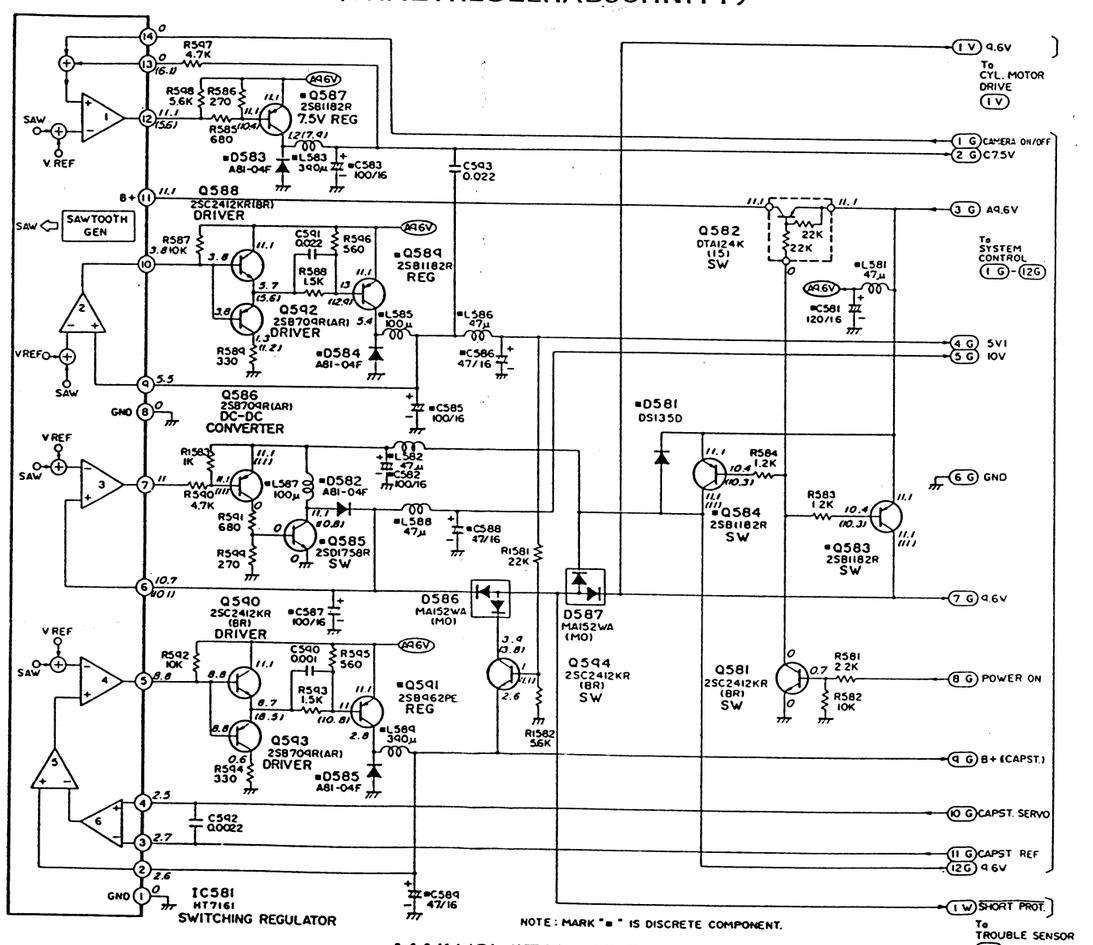


MAIN (POWER SUPPLY SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (STROMVERSORGUNGSABSCHNITT)

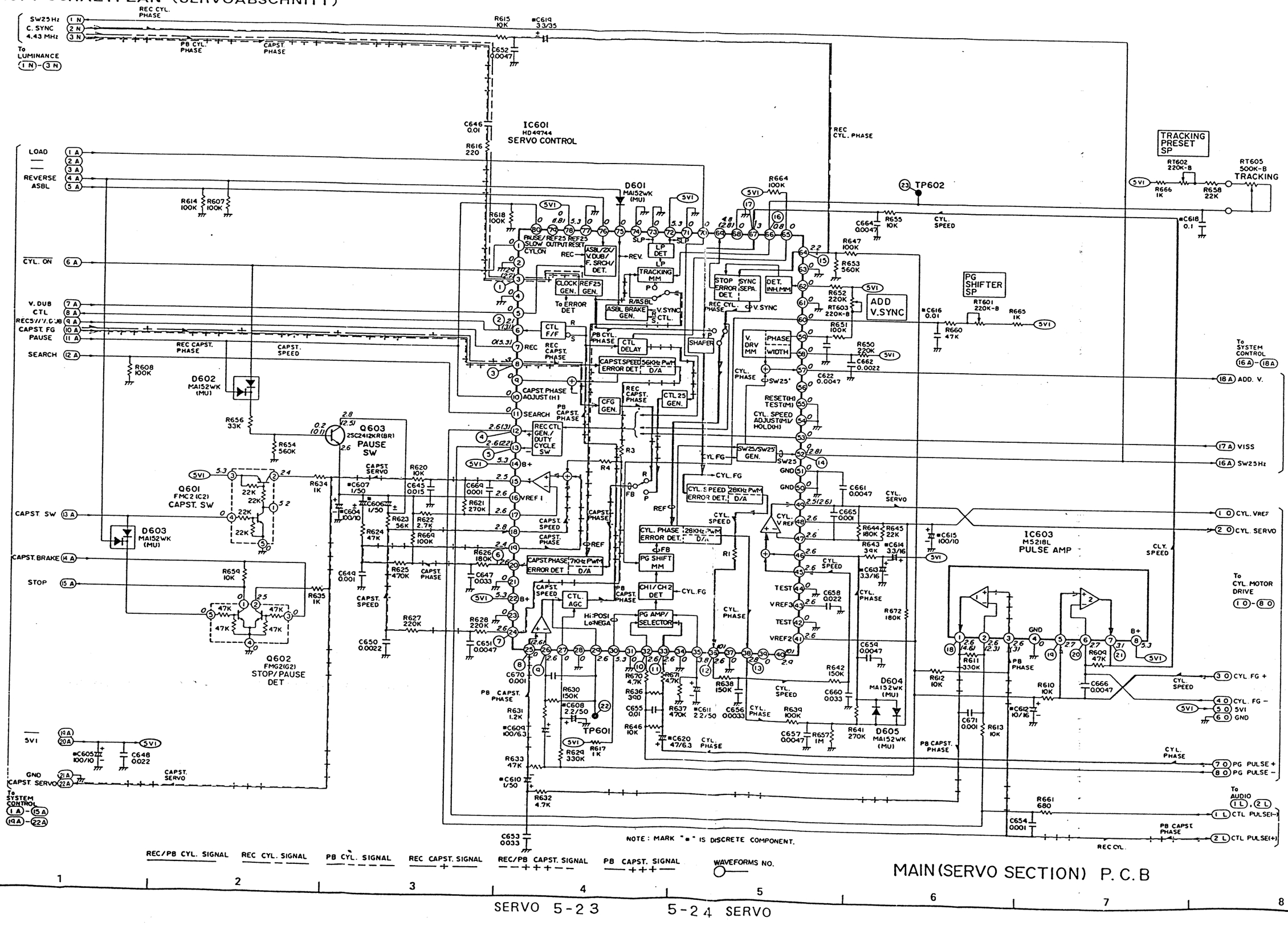
SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5 – 2 1
AUDIO	5 – 2 9
CAPSTAN MOTOR DRIVE	5 – 4 3
CCD 1H DELAY	5 – 3 5
CHARA · ADD/AE CONTROL	5 – 1 5
CHARACTER GEN. CONTROL	5 – 4 5
CHARACTER GEN. FUNCTION SW	5 – 4 5
CONTROL	5 – 1 7
CONTORL SW · SELF TIMER	5 – 1 7
CYL. MOTOR DRIVE	5 – 2 7
CHROMA	5 – 3 3
ELECTRONIC VIEW FINDER · INDI	5 – 1 9
FUNCTION SW	5 – 2 8
FOCUS SENSOR	5 – 2 0
LUMINANCE	5 – 3 7
MIC	5 – 4 3
PB.-/REC.- EQ	5 – 3 5
PROCESS	5 – 1 1
POWER SUPPLY	5 – 2 2
PRE AMP	5 – 3 1
S-CONNECTOR	5 – 4 7
SENSOR	5 – 7
SWITCHING REGULATOR	5 – 2 2
SYSTEM CONTROL	5 – 2 5
SERVO	5 – 2 3
TROUBLE SENSOR	5 – 3 9



MAIN (SWITCHING REGULATOR SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (SHALTREGLERABSCHNITT)



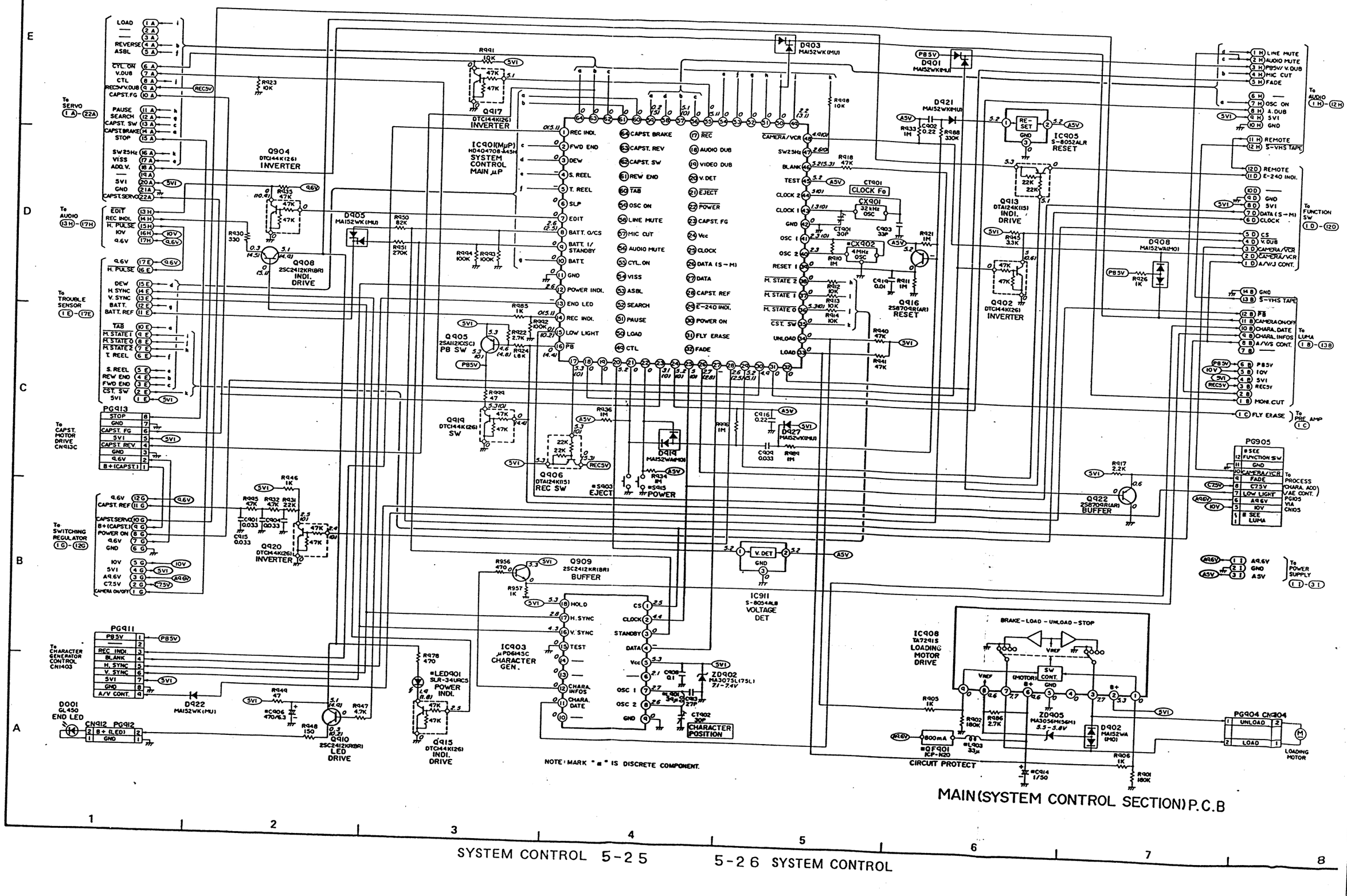
MAIN (SERVO SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (SERVOABSCHNITT)



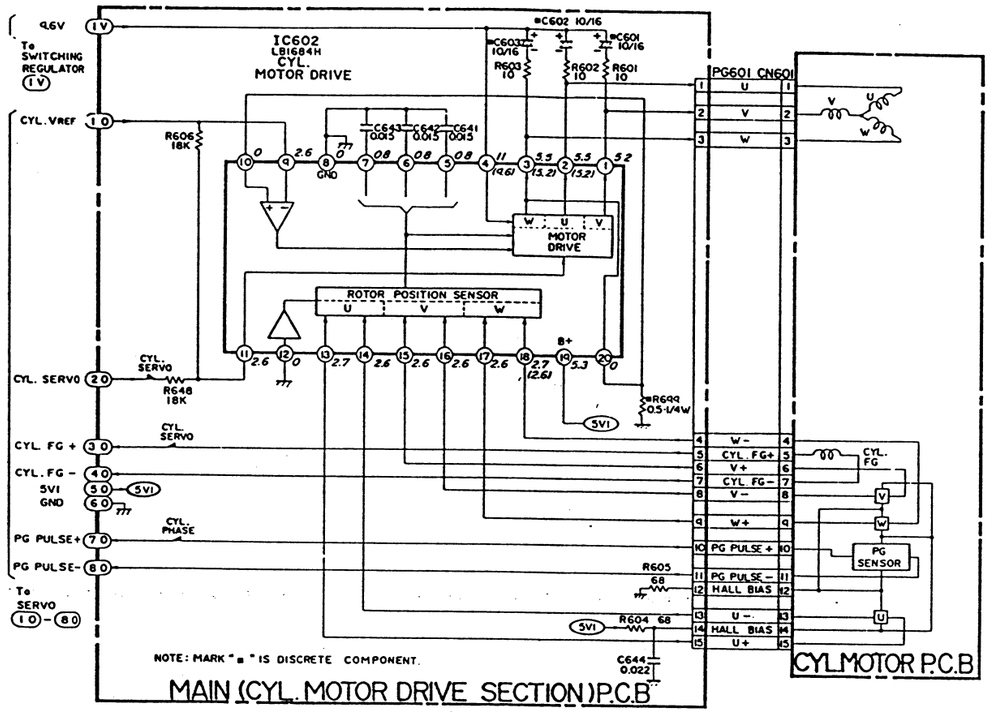
MAIN (SERVO SECTION) P. C. B

SERVO 5-23 5-24 SERVO

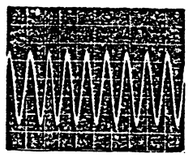
MAIN (SYSTEM CONTROL SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (SYSTEMREGELUNGABSCHNITT)



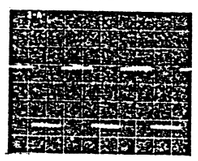
MAIN (CYL. MOTOR SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (KOPFTROMMELMOTORTREIBERKREISABSCHNITT)



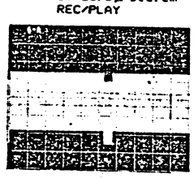
1-A IC601-3 400mVp-p 0.1V/200nsec.cm REC/PLAY



3-A IC601-8 3.4Vp-p 1V/200μ sec.cm REC/PLAY

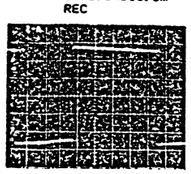


6-A IC601-20 3.9Vp-p 1V/20.0μ sec.cm REC/PLAY

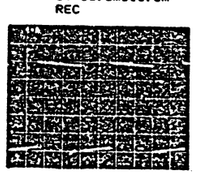


8-B IC601-25 85.0mVp-p 20mV/10.0msec.cm PLAY

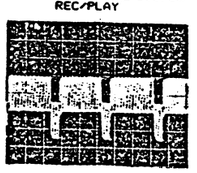
2-A IC601-6 5.0Vp-p 1V/5.0msec.cm REC



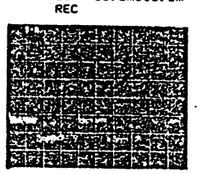
4-A IC601-12 5.0Vp-p 1V/10.0msec.cm REC



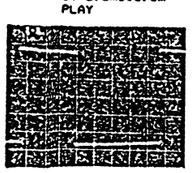
7-A IC601-24 1.7Vp-p 0.5V/5.0μ sec.cm REC/PLAY



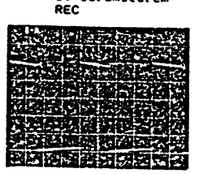
9-A IC601-26 34mVp-p 20mV/10.0msec.cm REC



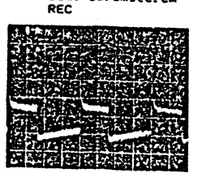
2-B IC601-6 5.0Vp-p 1V/5.0msec.cm PLAY



5-A IC601-13 5.0Vp-p 1V/10.0msec.cm REC

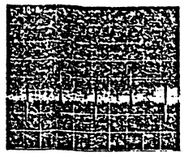


8-A IC601-25 180mVp-p 50mV/10.0msec.cm REC

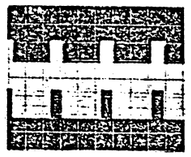


9-B IC601-26 47mVp-p 20mV/10.0msec.cm PLAY

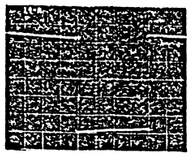
10-A IC601-32 63mVp-p 20mV/10.0msec.cm REC/PLAY



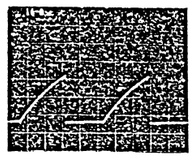
12-A IC601-36 2.1Vp-p 0.5V/20.0μ sec.cm REC/PLAY



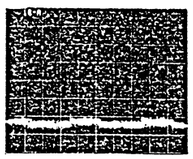
14-A IC601-52 5.0Vp-p 1V/5.0msec.cm REC/PLAY



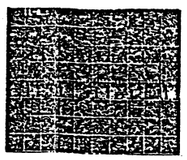
16-A IC601-66 2.7Vp-p 1V/10.0msec.cm REC/PLAY



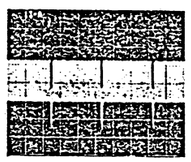
18-A IC603-1 1.1Vp-p 0.5V/10.0msec.cm REC



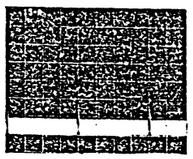
11-A IC601-33 68mVp-p 20mV/10.0msec.cm REC/PLAY



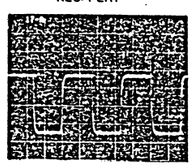
13-A IC601-38 1.9Vp-p 0.5V/10.0μ sec.cm REC/PLAY



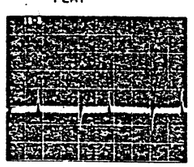
15-A IC601-64 3.0Vp-p 0.5V/5.0msec.cm REC/PLAY



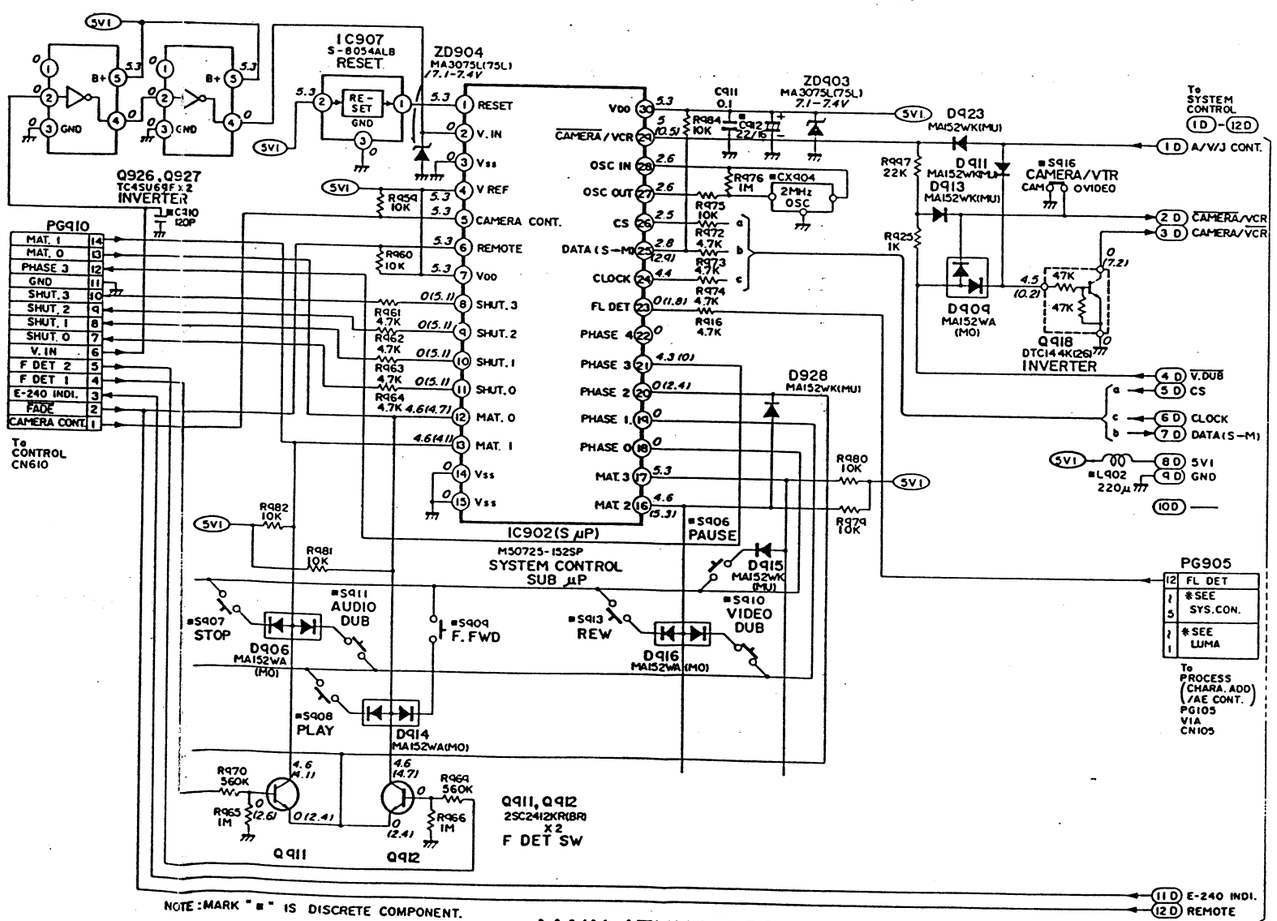
17-A IC601-67 3.2Vp-p 1V/1.0msec.cm REC/PLAY



18-B IC603-1 130mVp-p 50mV/10.0msec.cm PLAY

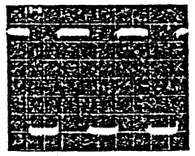


MAIN (FUNCTION SW SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (FUNKTIONSSCHALTERABSCHNITT)



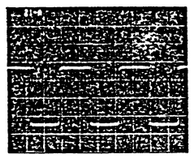
MAIN (AUDIO SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (AUDIOABSCHNITT)

19-A IC603-5 560mVp-p
0.1V/1.0msec.cm
REC/PLAY

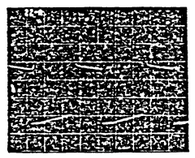


20-A IC603-6 560mVp-p
0.1V/1.0msec.cm
REC/PLAY

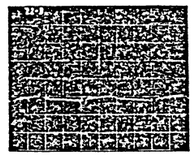
21-A IC603-7 3.3Vp-p
1V/1.0msec.cm
REC/PLAY



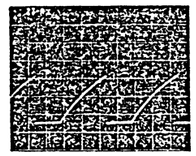
22-A TP601 4.2Vp-p
1V/10.0msec.cm
REC



22-B TP601 4.0Vp-p
1V/10.0msec.cm
PLAY



23-A TP602 2.7Up-p
1V/10.0msec.cm
REC/PLAY



SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5-21
AUDIO	5-29
CAPSTAN MOTOR DRIVE	5-43
CCD IH DELAY	5-35
CHARA · ADD/AE CONTROL	5-15
CHARACTER GEN. CONTROL	5-45
CHARACTER GEN. FUNCTION SW	5-45
CONTROL	5-17
CONTORL SW · SELF TIMER	5-17
CYL. MOTOR DRIVE	5-27
CHROMA	5-33
ELECTRONIC VIEW FINDER · INDI	5-19
FUNCTION SW	5-28
FOCUS SENSOR	5-20
LUMINANCE	5-37
MIC	5-43
PB.-/REC.- EQ	5-35
PROCESS	5-11
POWER SUPPLY	5-22
PRE AMP	5-31
S-CONNECTOR	5-47
SENSOR	5-7
SWITCHING REGULATOR	5-22
SYSTEM CONTROL	5-25
SERVO	5-23
TROUBLE SENSOR	5-39

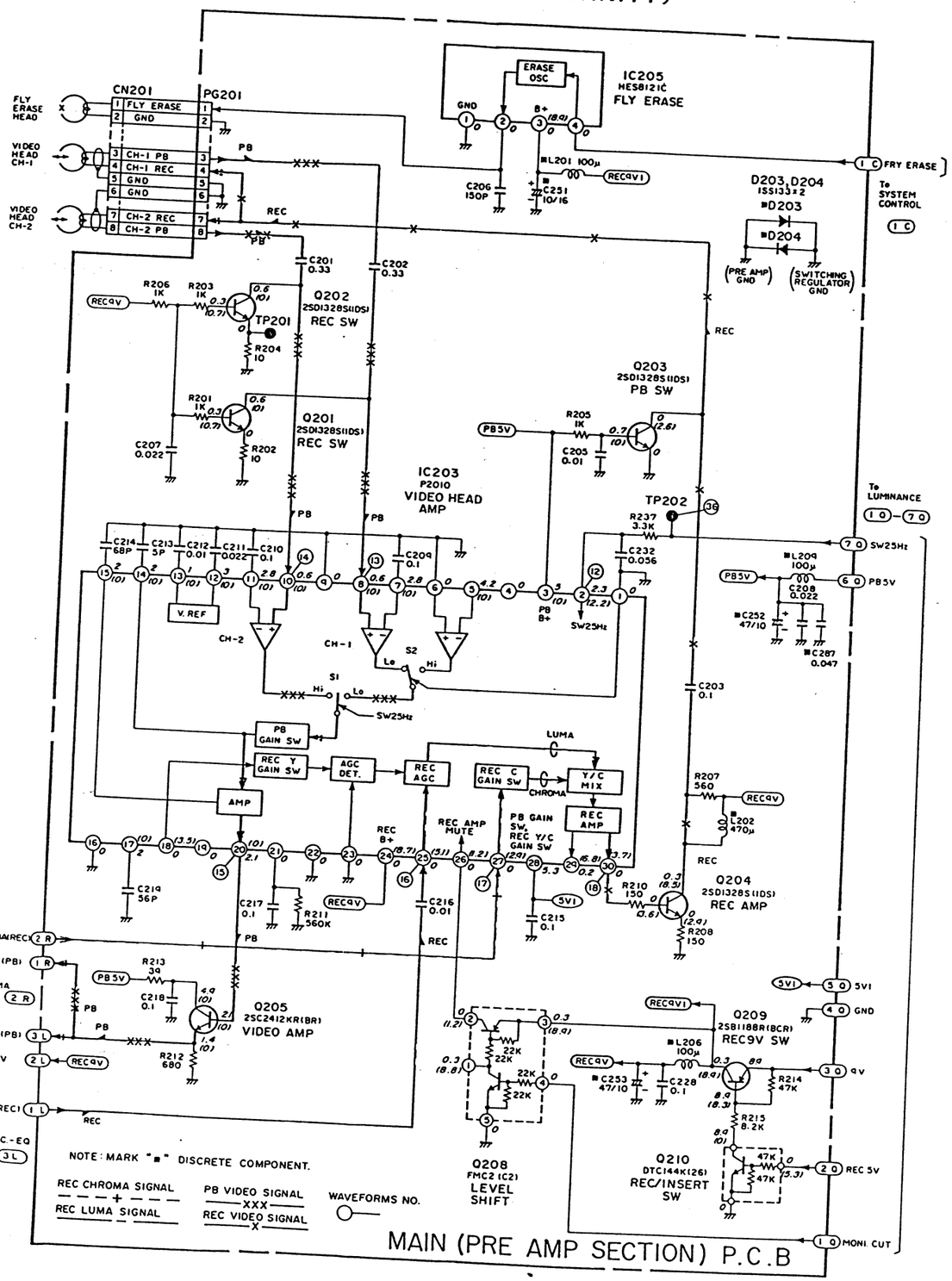
NOTE : MARK "■" IS DISCRETE COMPONENT.

REC AUDIO SIGNAL —— + ——

PB AUDIO SIGNAL —+++—

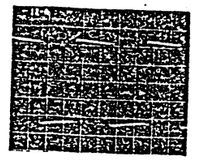
MAIN (AUDIO SECTION) P. C. B

MAIN (PRE AMP SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (VORVERSTTÄRKERABSCHNITT)

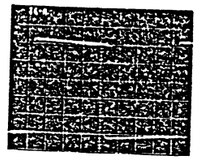


SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5-21
AUDIO	5-29
CAPSTAN MOTOR DRIVE	5-43
CCD 1H DELAY	5-35
CHARA · ADD/AE CONTROL	5-15
CHARACTER GEN. CONTROL	5-45
CHARACTER GEN. FUNCTION SW	5-45
CONTROL	5-17
CONTORL SW · SELF TIMER	5-17
CYL. MOTOR DRIVE	5-27
CHROMA	5-33
ELECTRONIC VIEW FINDER · INDI	5-19
FUNCTION SW	5-28
FOCUS SENSOR	5-20
LUMINANCE	5-37
MIC	5-43
PB-/REC.-EQ	5-35
PROCESS	5-11
POWER SUPPLY	6-22
PRE AMP	5-31
S-CONNECTOR	5-47
SENSOR	5-7
SWITCHING REGULATOR	5-22
SYSTEM CONTROL	5-25
SERVO	5-23
TROUBLE SENSOR	5-39

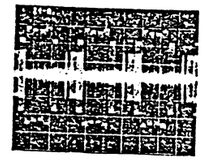
12-A IC203-2 4.9Vp-p
1V/10.0msec.cm
REC/PLAY



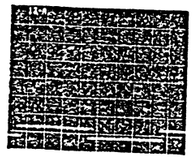
36-A TP202 5.0Vp-p
1V/5.0msec.cm
REC/PLAY



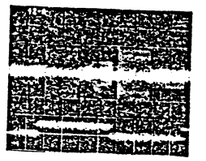
24-A IC301-9 1.1Vp-p
0.2V/20.0µ sec.cm
REC/PLAY



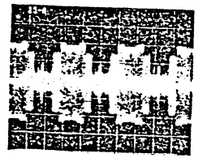
13-A IC203-8 150mVp-p
50mV/5.0msec.cm
REC



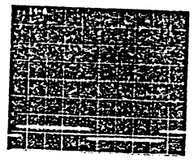
42-A TP209 150mVp-p
50mV/5.0msec.cm
REC



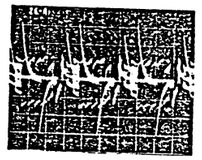
25-A IC301-12 230mVp-p
50mV/20.0µ sec.cm
REC/PLAY



14-A IC203-10 150mVp-p
50mV/5.0msec.cm
REC

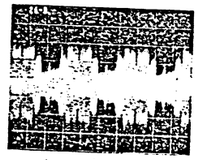


26-A IC301-14 1.2Vp-p
0.2V/20.0µ sec.cm
REC

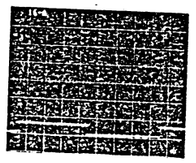


15-B IC203-20 510mVp-p
0.2V/5.0msec.cm
PLAY

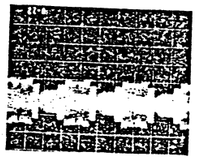
26-B IC301-14 430mVp-p
0.1V/20.0µ sec.cm
PLAY



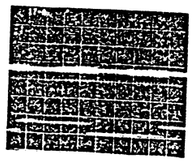
16-A IC203-25 63mVp-p
50mV/5.0msec.cm
REC



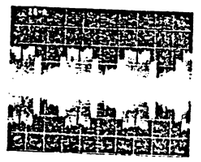
27-A IC301-15 250mVp-p
0.1V/20.0µ sec.cm
REC/PLAY



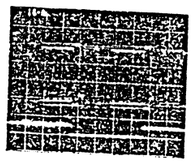
17-A IC203-27 300mVp-p
0.1V/5.0msec.cm
REC



28-A IC301-16 210mVp-p
50mV/20.0µ sec.cm
REC/PLAY



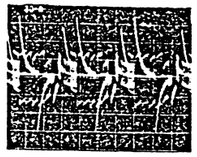
18-A IC203-30 4.2Vp-p
1V/5.0msec.cm
REC



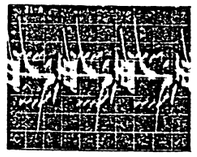
29-B IC301-21 69mVp-p
20mV/5.0msec.cm
PLAY

MAIN (CHROMA SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (CHROMINANZABSCHNITT)

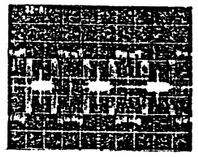
30-A IC301-23 1.3Vp-p
0.2V/20.0μ sec.cm
REC



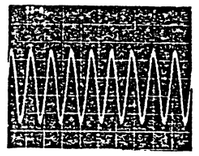
31-A IC301-24 1.3Vp-p
0.2V/20.0μ sec.cm
REC



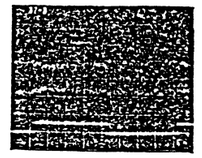
32-A IC301-30 410mVp-p
0.1V/20.0μ sec.cm
REC



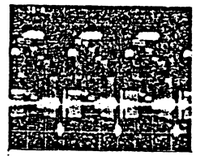
33-A IC301-39 410mVp-p
0.1V/200nsec.cm
REC/PLAY



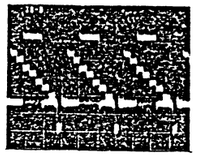
37-B TP203 230mVp-p
0.1V/5.0msec.cm
PLAY



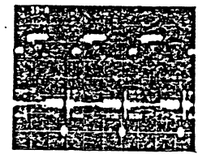
38-A TP204 540mVp-p
0.1V/20.0μ sec.cm
REC



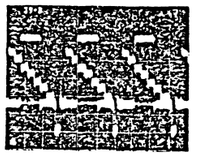
38-B TP204 540mVp-p
0.1V/20.0μ sec.cm
PLAY



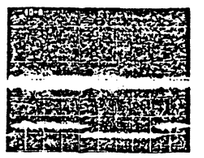
39-A TP205 540mVp-p
0.1V/20.0μ sec.cm
REC



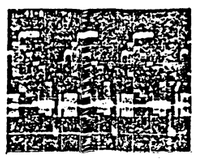
39-B TP205 540mVp-p
0.1V/20.0μ sec.cm
PLAY



40-A TP206 88mVp-p
50mV/5.0msec.cm
REC



41-A TP207 1.1Vp-p
0.2V/20.0μ sec.cm
REC/PLAY

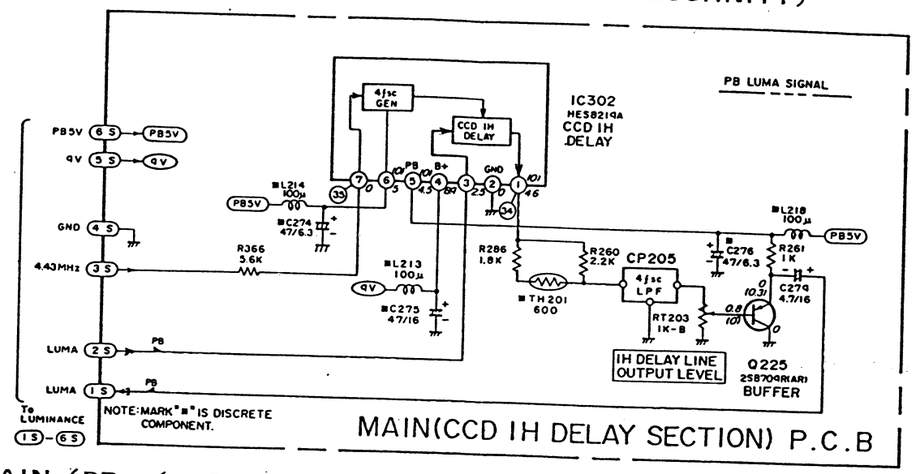


SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5-21
AUDIO	5-29
CAPSTAN MOTOR DRIVE	5-43
CCD 1H DELAY	5-35
CHARA · ADD/AE CONTROL	5-15
CHARACTER GEN. CONTROL	5-45
CHARACTER GEN. FUNCTION SW	5-45
CONTROL	5-17
CONTORL SW · SELF TIMER	5-17
CYL. MOTOR DRIVE	5-27
CHROMA	5-33
ELECTRONIC VIEW FINDER · INDI	5-19
FUNCTION SW	5-28
FOCUS SENSOR	5-30
LUMINANCE	5-37
MIC	5-43
PB../REC. EQ	5-35
PROCESS	5-11
POWER SUPPLY	6-22
PRE AMP	5-31
S-CONNECTOR	5-47
SENSOR	5-7
SWITCHING REGULATOR	5-22
SYSTEM CONTROL	5-25
SERVO	5-23
TROUBLE SENSOR	5-39

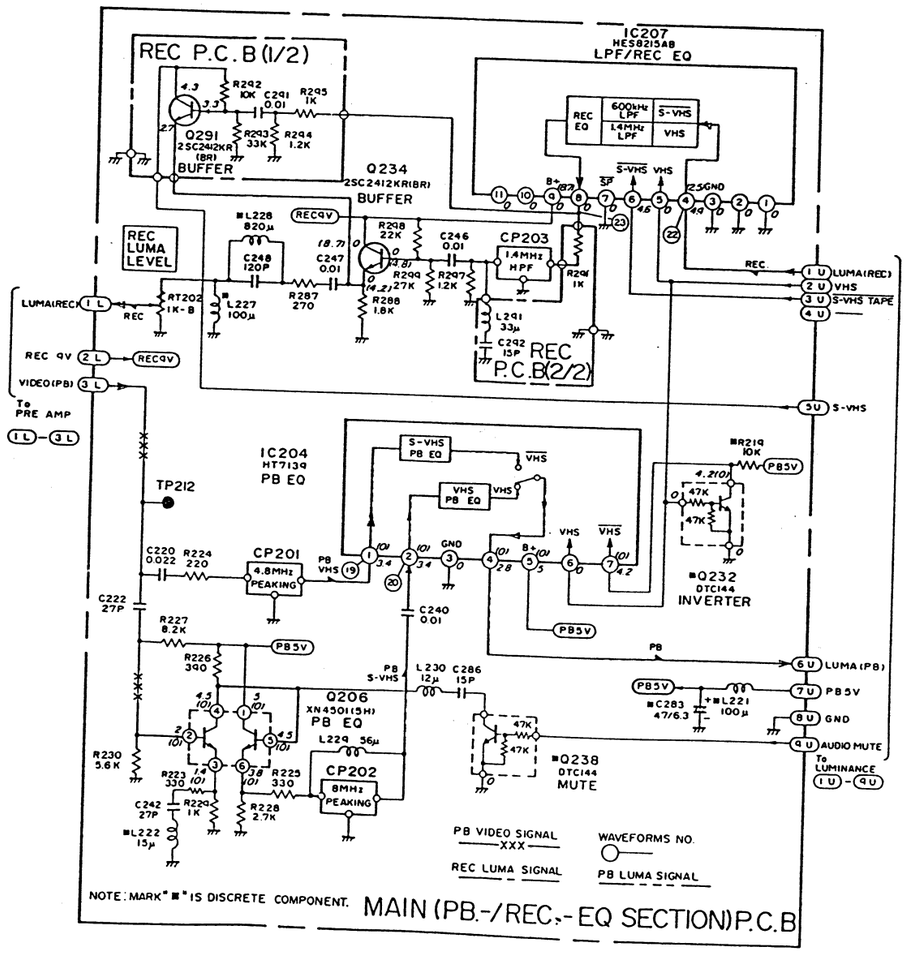
NOTE: MARK " ■ " IS DISCRETE COMPONENT.

REC CHROMA SIGNAL — PB CHROMA SIGNAL — WAVEFORMS NO.

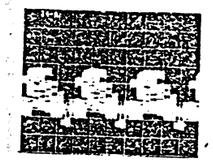
MAIN (CCD 1H DELAY SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (CCD 1H VERZOGERUNGSABSCHNITT)



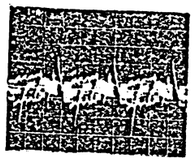
MAIN (PB.-/REC.- EQ SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (WIEDERGABE-/AUFNAHME-ENTZERRER-ABSCHNITT)



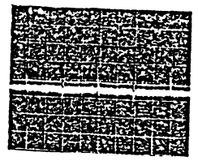
34-A IC302-1 1.6Vp-p 0.5V/20.0μ sec.cm REC



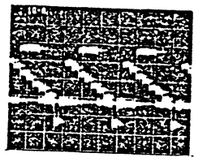
1-A IC201-5 770mVp-p 0.2V/20.0μ sec.cm REC



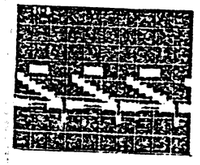
6-A IC201-33 390mVp-p 0.1V/10.0msec.cm REC/PLAY



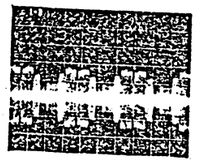
10-A IC202-4 430mVp-p 0.1V/20.0μ sec.cm REC/PLAY



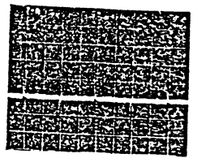
34-B IC302-1 1.6Vp-p 0.5V/20.0μ sec.cm PLAY



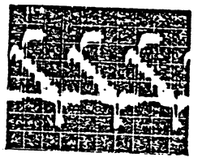
1-B IC201-5 330mVp-p 0.1V/20.0μ sec.cm PLAY



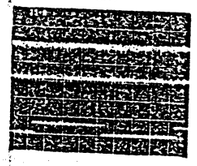
7-A IC201-35 620mVp-p 0.2V/10.0msec.cm REC/PLAY



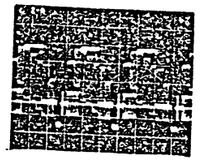
11-A IC202-1 510mVp-p 0.1V/20.0μ sec.cm REC/PLAY



35-A IC302-7 100mVp-p 50mV/5.0msec.cm REC/PLAY

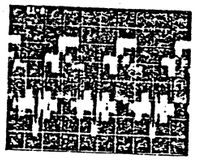


2-A IC201-9 2.2Vp-p 0.5V/20.0μ sec.cm REC/PLAY

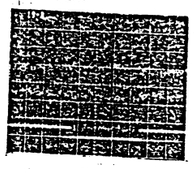


8-A IC201-39 480mVp-p 0.1V/20.0μ sec.cm REC

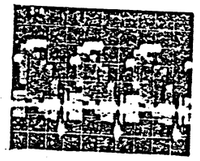
21-A IC206-2 520mVp-p 0.1V/20.0μ sec.cm REC



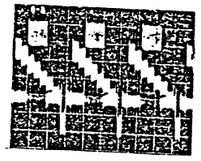
19-B IC204-1 230mVp-p 0.1V/5.0msec.cm PLAY



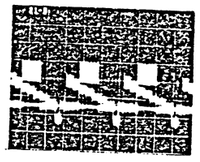
3-A IC201-15 510mVp-p 0.1V/20.0μ sec.cm REC



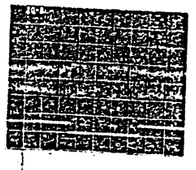
8-B IC201-39 610mVp-p 0.1V/20.0μ sec.cm PLAY



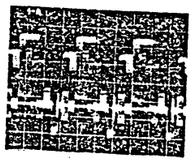
21-B IC206-2 690mVp-p 0.2V/20.0μ sec.cm PLAY



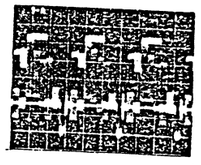
20-B IC204-2 200mVp-p 0.1V/5.0msec.cm PLAY



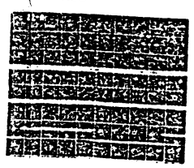
4-A IC201-17 1.1Vp-p 0.2V/20.0μ sec.cm REC



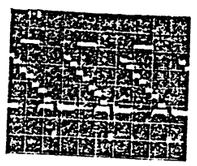
9-A IC201-40 1.1Vp-p 0.2V/20.0μ sec.cm REC



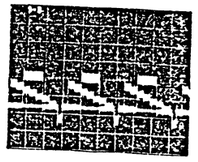
22-A IC207-4 1.1Vp-p 0.5V/5.0msec.cm REC



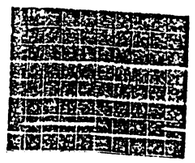
4-B IC201-17 1.1Vp-p 0.2V/20.0μ sec.cm PLAY



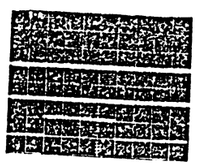
9-B IC201-40 1.4Vp-p 0.5V/20.0μ sec.cm PLAY



23-A IC207-8 210mVp-p 0.1V/5.0msec.cm REC

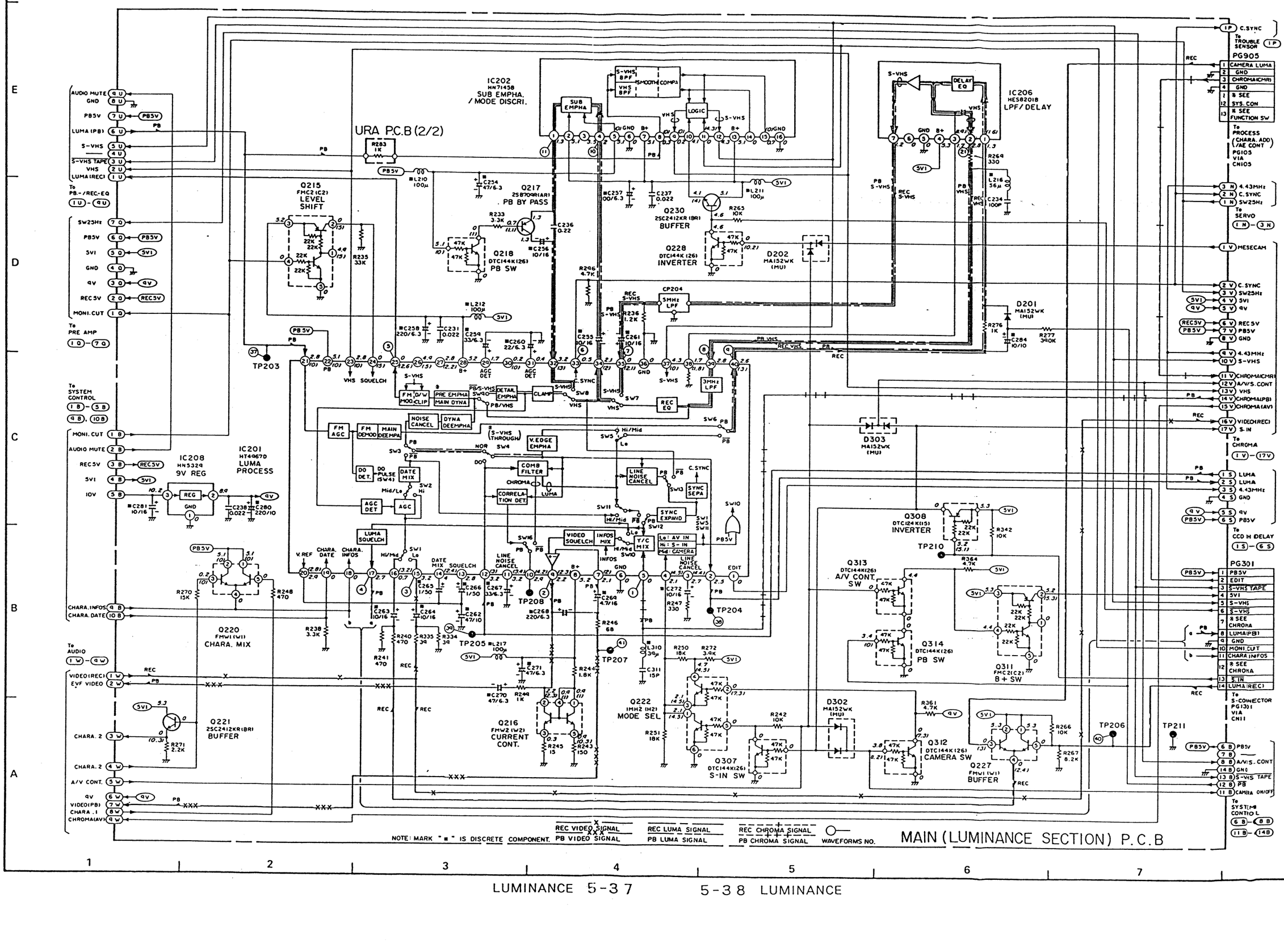


5-A IC201-25 1.1Vp-p 0.5V/5.0msec.cm REC



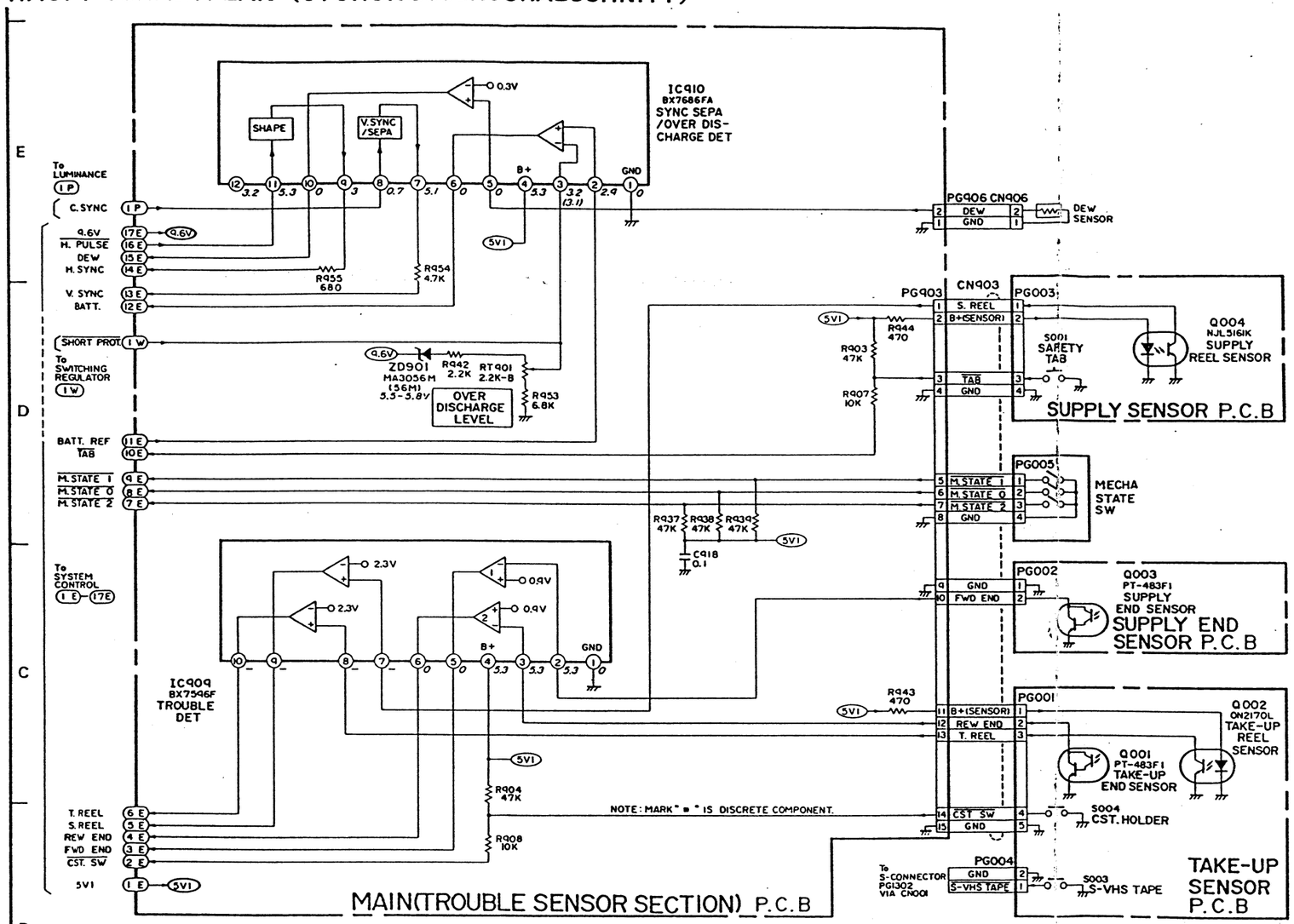
SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5-21
AUDIO	5-29
CAPSTAN MOTOR DRIVE	5-43
CCD 1H DELAY	5-35
CHARA · ADD/AE CONTROL	5-15
CHARACTER GEN. CONTROL	5-45
CHARACTER GEN. FUNCTION SW	5-45
CONTROL	5-17
CONTORL SW · SELF TIMER	5-17
CYL. MOTOR DRIVE	5-27
CHROMA	5-33
ELECTRONIC VIEW FINDER · INDI	5-19
FUNCTION SW	5-28
FOCUS SENSOR	5-20
LUMINANCE	5-37
MIC	5-43
PB.-/REC.- EQ	5-35
PROCESS	5-11
POWER SUPPLY	6-22
PRE AMP	5-31
S-CONNECTOR	5-47
SENSOR	5-7
SWITCHING REGULATOR	5-22
SYSTEM CONTROL	5-25
SERVO	5-23
TROUBLE SENSOR	5-39

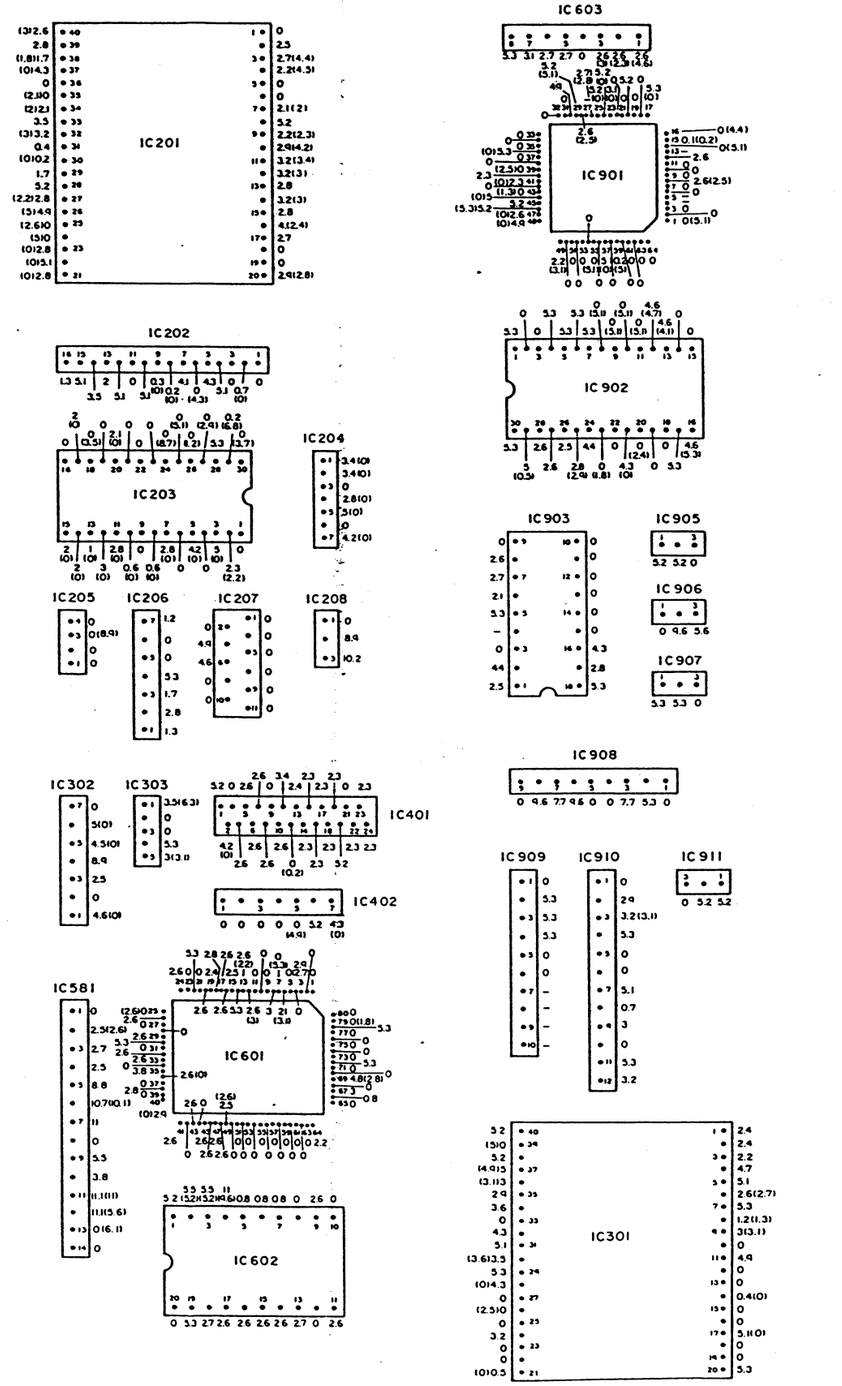
MAIN (LUMINANCE SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (LUMINANZABSCHNITT)



LUMINANCE 5-37 5-38 LUMINANCE

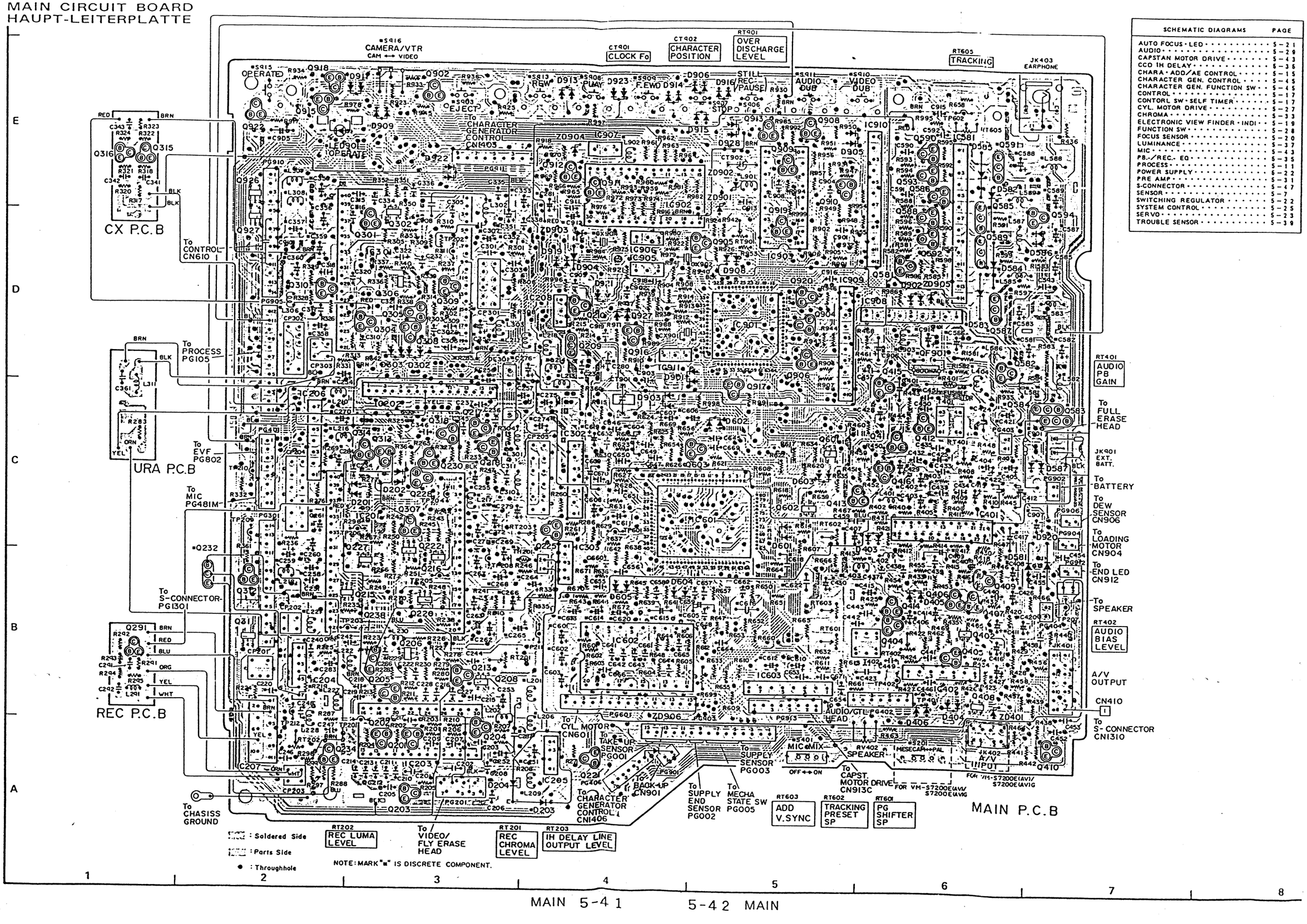
MAIN (TROUBLE SENSOR SECTION) SCHEMATIC
HAUPT-SCHALTPLAN (STÖRUNGSSENSORABSCHNITT)





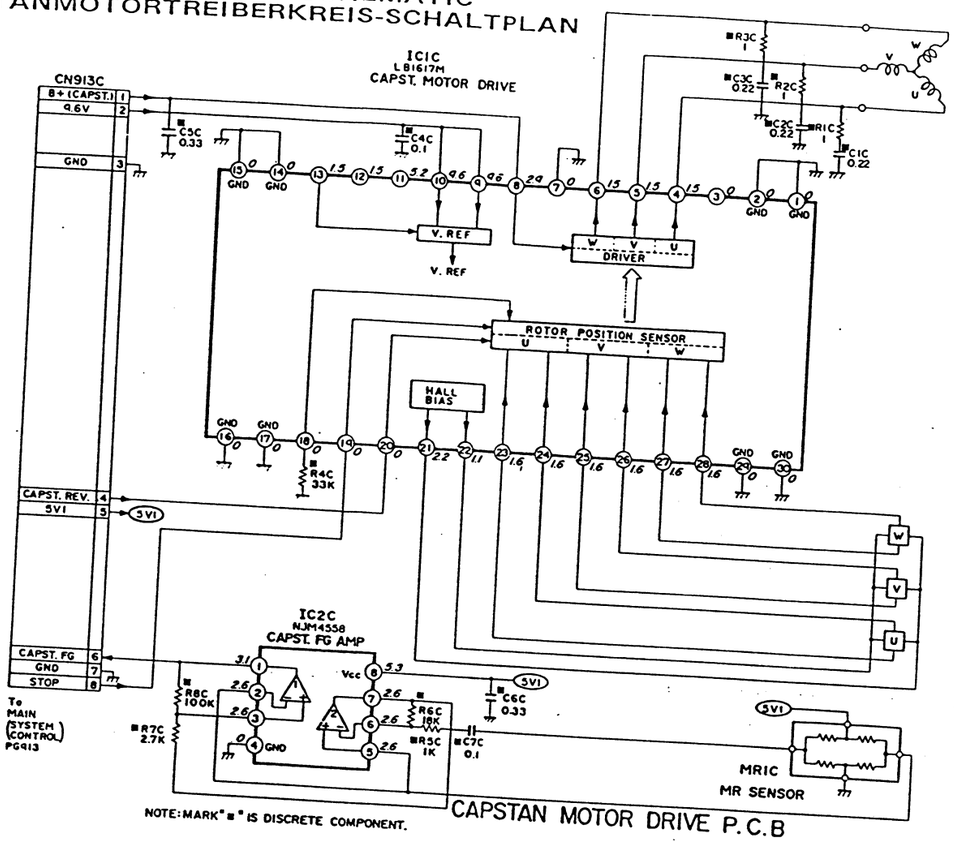
SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5 – 2 1
AUDIO	5 – 2 9
CAPSTAN MOTOR DRIVE	5 – 4 3
CCD 1H DELAY	5 – 3 5
CHARA · ADD/AE CONTROL	5 – 1 5
CHARACTER GEN. CONTROL	5 – 4 5
CHARACTER GEN. FUNCTION SW	5 – 4 5
CONTROL	5 – 1 7
CONTORL SW · SELF TIMER	5 – 1 7
CYL. MOTOR DRIVE	5 – 2 7
CHROMA	5 – 3 3
ELECTRONIC VIEW FINDER · INDI	5 – 1 9
FUNCTION SW	5 – 2 8
FOCUS SENSOR	5 – 2 0
LUMINANCE	5 – 3 7
MIC	5 – 4 3
PB-/REC- EQ	5 – 3 5
PROCESS	5 – 1 1
POWER SUPPLY	5 – 2 2
PRE AMP	5 – 3 1
S-CONNECTOR	5 – 4 7
SENSOR	5 – 7
SWITCHING REGULATOR	5 – 2 2
SYSTEM CONTROL	5 – 2 5
SERVO	5 – 2 3
TROUBLE SENSOR	5 – 3 9

MAIN CIRCUIT BOARD
HAUPT-LEITERPLATTE



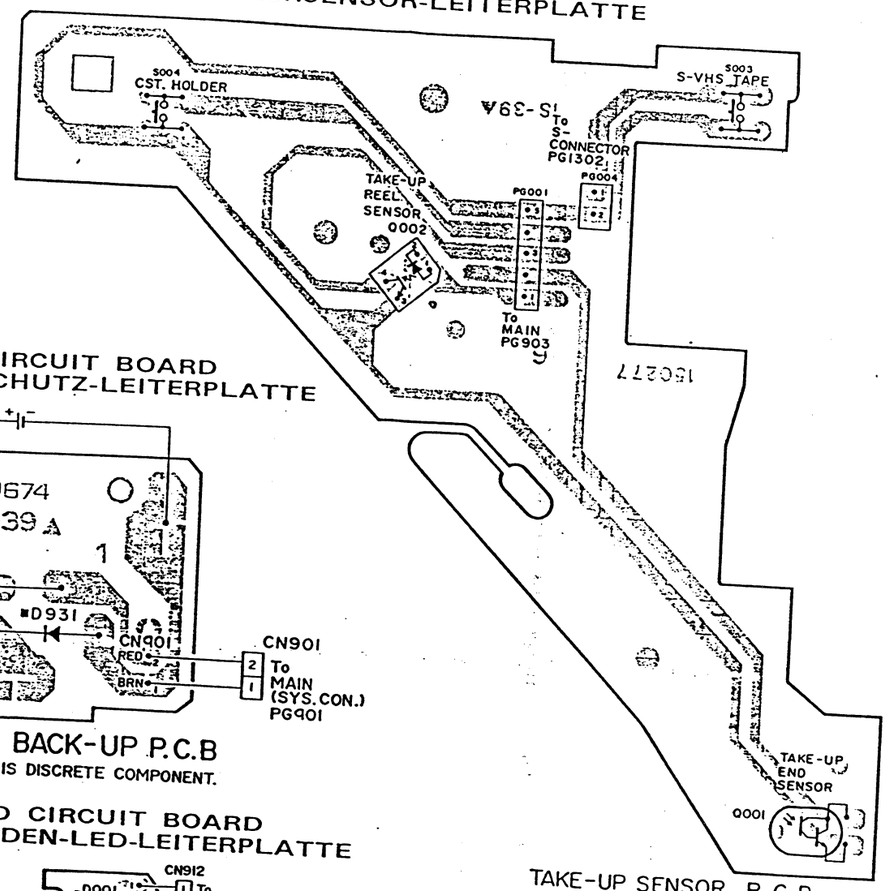
SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5 – 2 1
AUDIO	5 – 2 9
CAPSTAN MOTOR DRIVE	5 – 4 3
CCD 1H DELAY	5 – 3 5
CHARA · ADD/AE CONTROL	5 – 1 5
CHARACTER GEN. CONTROL	5 – 4 5
CHARACTER GEN. FUNCTION SW	5 – 4 5
CONTROL	5 – 1 7
CONTORL SW · SELF TIMER	5 – 1 7
CYL. MOTOR DRIVE	5 – 2 7
CHROMA	5 – 3 3
ELECTRONIC VIEW FINDER · INDI	5 – 1 9
FUNCTION SW	5 – 2 8
FOCUS SENSOR	5 – 2 0
LUMINANCE	5 – 3 7
MIC	5 – 4 3
PB.-/REC.- EQ	5 – 3 5
PROCESS	5 – 1 1
POWER SUPPLY	6 – 2 2
PRE AMP	5 – 3 1
S-CONNECTOR	5 – 4 7
SENSOR	5 – 7
SWITCHING REGULATOR	5 – 2 2
SYSTEM CONTROL	5 – 2 5
SERVO	5 – 2 3
TROUBLE SENSOR	5 – 3 9

CAPSTAN MOTOR DRIVE SCHEMATIC
CAPSTANMOTORTREIBERKREIS-SCHALTPLAN



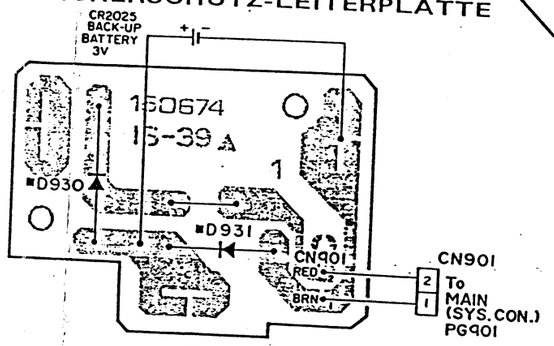
CAPSTAN MOTOR DRIVE P.C.B

TAKE-UP SENSOR CIRCUIT BOARD
AUFWICKELTELLERSENSOR-LEITERPLATTE



TAKE-UP SENSOR P.C.B

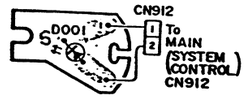
BACK-UP CIRCUIT BOARD
SPEICHERSCHUTZ-LEITERPLATTE



BACK-UP P.C.B

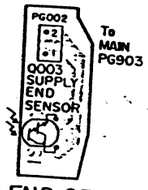
NOTE: MARK "■" IS DISCRETE COMPONENT.

END LED CIRCUIT BOARD
BANDENDEN-LED-LEITERPLATTE



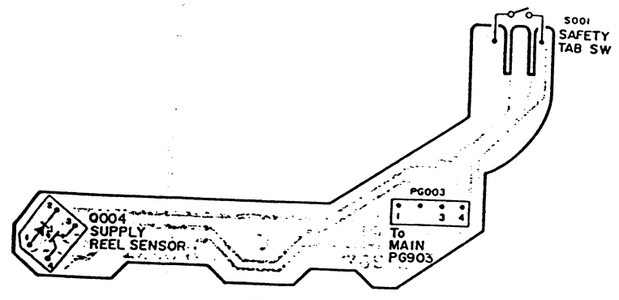
END LED P.C.B

SUPPLY END SENSOR CIRCUIT BOARD
VORRATSTELLER-BANDENDENSENSOR-LEITERPLATTE



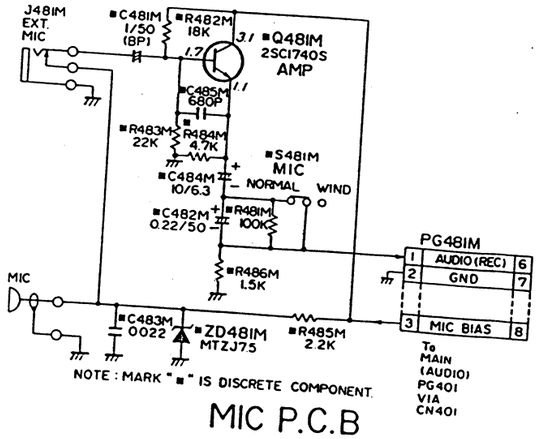
SUPPLY END SENSOR P.C.B

SUPPLY SENSOR CIRCUIT BOARD
VORRATSTELLERSENSOR-LEITERPLATTE



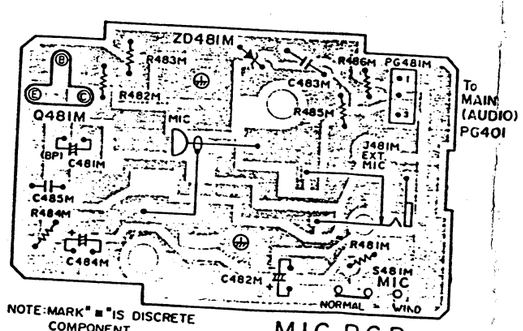
SUPPLY SENSOR P.C.B

MIC SCHEMATIC
MIKROFON-SCHALTPLAN



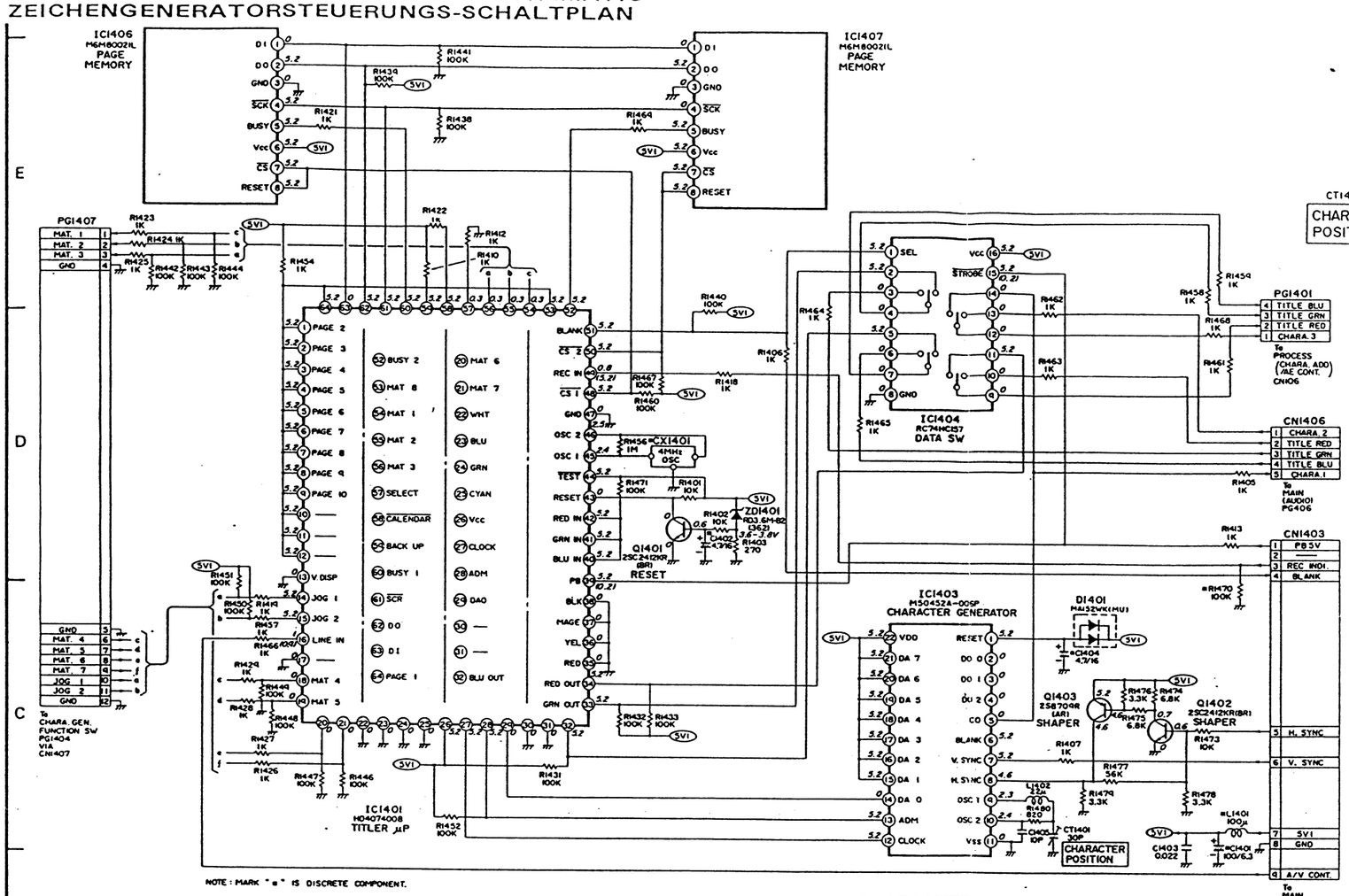
MIC P.C.B

MIC CIRCUIT BOARD
MIKROFON-LEITERPLATTE



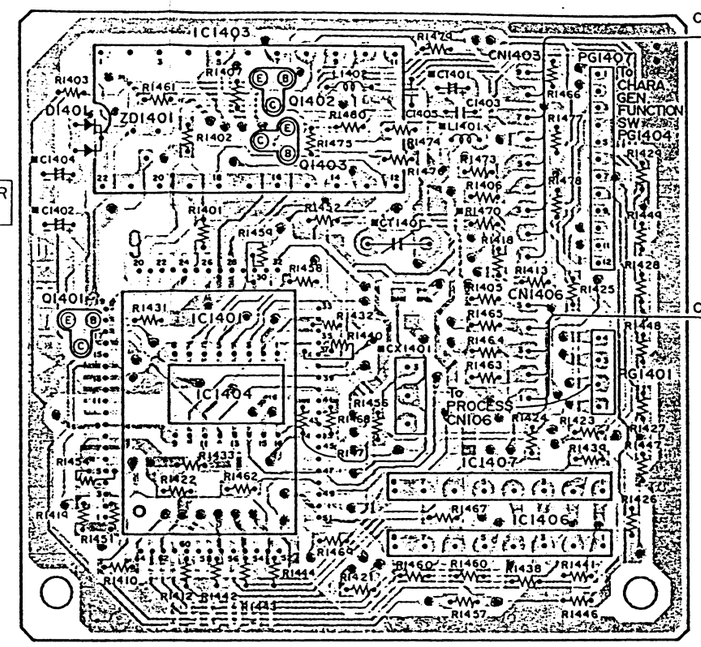
MIC P.C.B

CHARACTER GENERATOR CONTROL SCHEMATIC
ZEICHENGENERATORSTEUERUNGS-SCHALTPLAN


IC1406 M6M80021L PAGE MEMORY
IC1407 M6M80021L PAGE MEMORY
IC1404 RC74HC157 DATA SW
IC1403 M50452A-005P CHARACTER GENERATOR
IC1401 HD4074008 TITLER μP
CX1401 4MHz OSC
Q1401 2SC2412KR(BR) RESET
Q1402 2SC2412K(RBR) SHAPER
Q1403 2SB709R (AR) SHAPER
DI401 MA152WK(MU)
ZD1401 MA3 6.8V-8.2V (362)
CT1401 30P CHARACTER POSITION
PG1407
PG1404 To CHARA. GEN. FUNCTION SW PG1404 VIA CN1407
CN1406 To PROCESS (CHARA. ADD) /AE CONT. CN106
CN1406 To MAIN (AUDIO) PG406
CN1403 To MAIN (SYSTEM CONTROL) PG911
NOTE : MARK "■" IS DISCRETE COMPONENT.

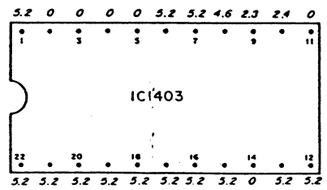
CHARACTER GENERATOR CONTROL P.C.B

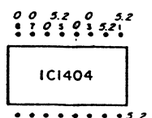
CHARACTER GENERATOR CONTROL CIRCUIT BOARD
ZEICHENGENERATORSTEUERUNGS-LEITERPLATTE

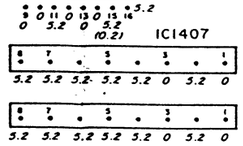


CHARA. GEN. CONTROL P.C.B

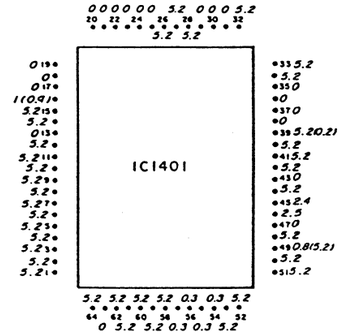
NOTE: MARK "■" IS DISCRETE COMPONENT.



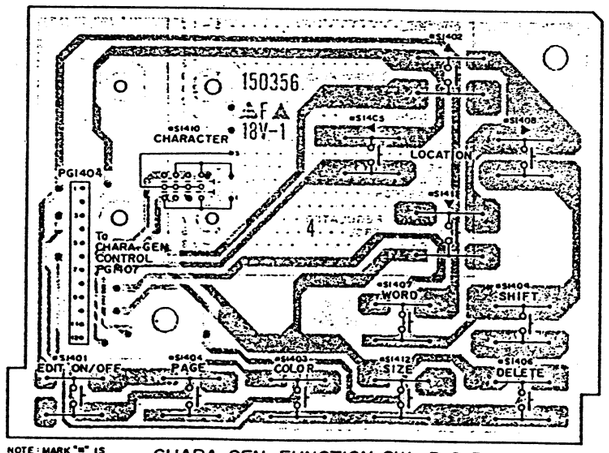




■ : Soldered side
▭ : Parts side
● : Through hole



CHARACTER GENERATOR FUNCTION SW CIRCUIT BOARD
ZEICHENGENERATOR-FUNKTIONSSCHALTER-LEITERPLATTE

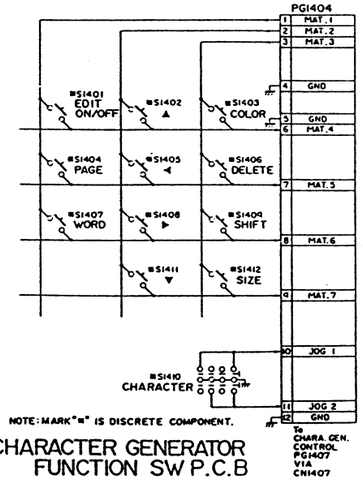


■ : Soldered side
▭ : Parts side
● : Through hole

NOTE : MARK "■" IS DISCRETE COMPONENT.

CHARA. GEN. FUNCTION SW P.C.B

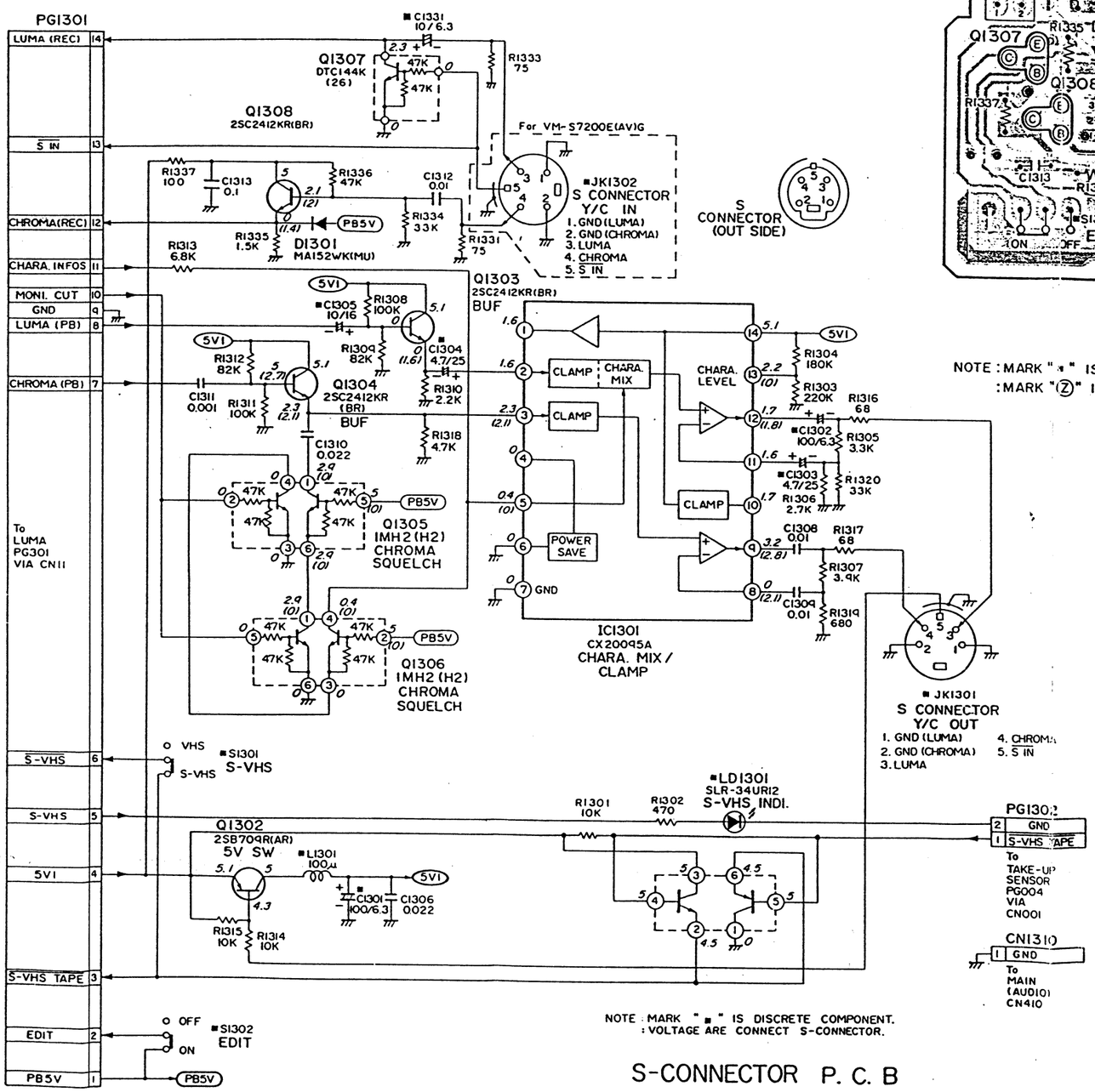
CHARACTER GENERATOR FUNCTION SW SCHEMATIC
ZEICHENGENERATOR-FUNKTION-SSCHALTER-SCHALTPLAN



NOTE: MARK "■" IS DISCRETE COMPONENT.

CHARACTER GENERATOR FUNCTION SW P.C.B

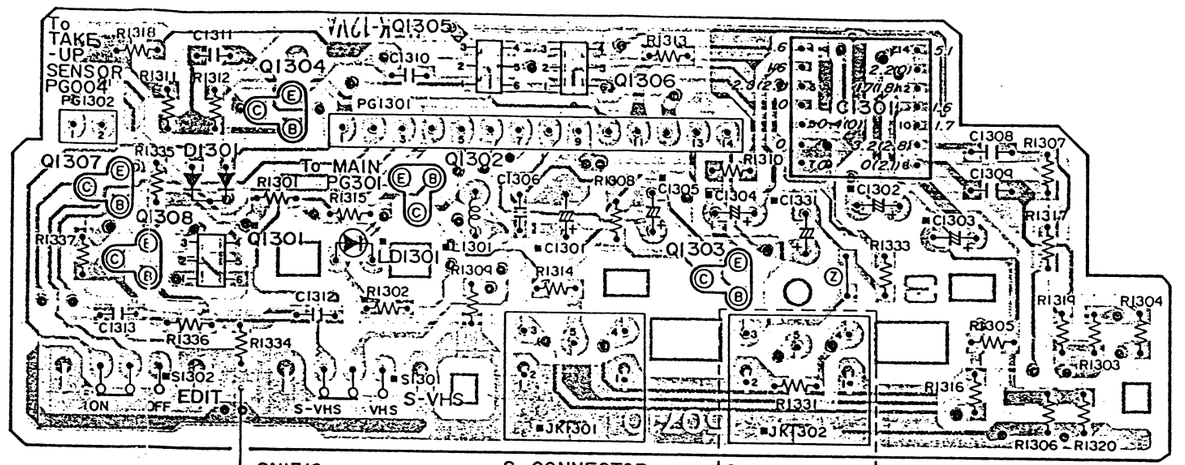
S-CONNECTOR SCHEMATIC
S-STECKER SCHALTPLAN



NOTE : MARK "■" IS DISCRETE COMPONENT.
: VOLTAGE ARE CONNECT S-CONNECTOR.

S-CONNECTOR P. C. B

S-CONNECTOR CIRCUIT BOARD
S-STECKER LEITERPLATTE

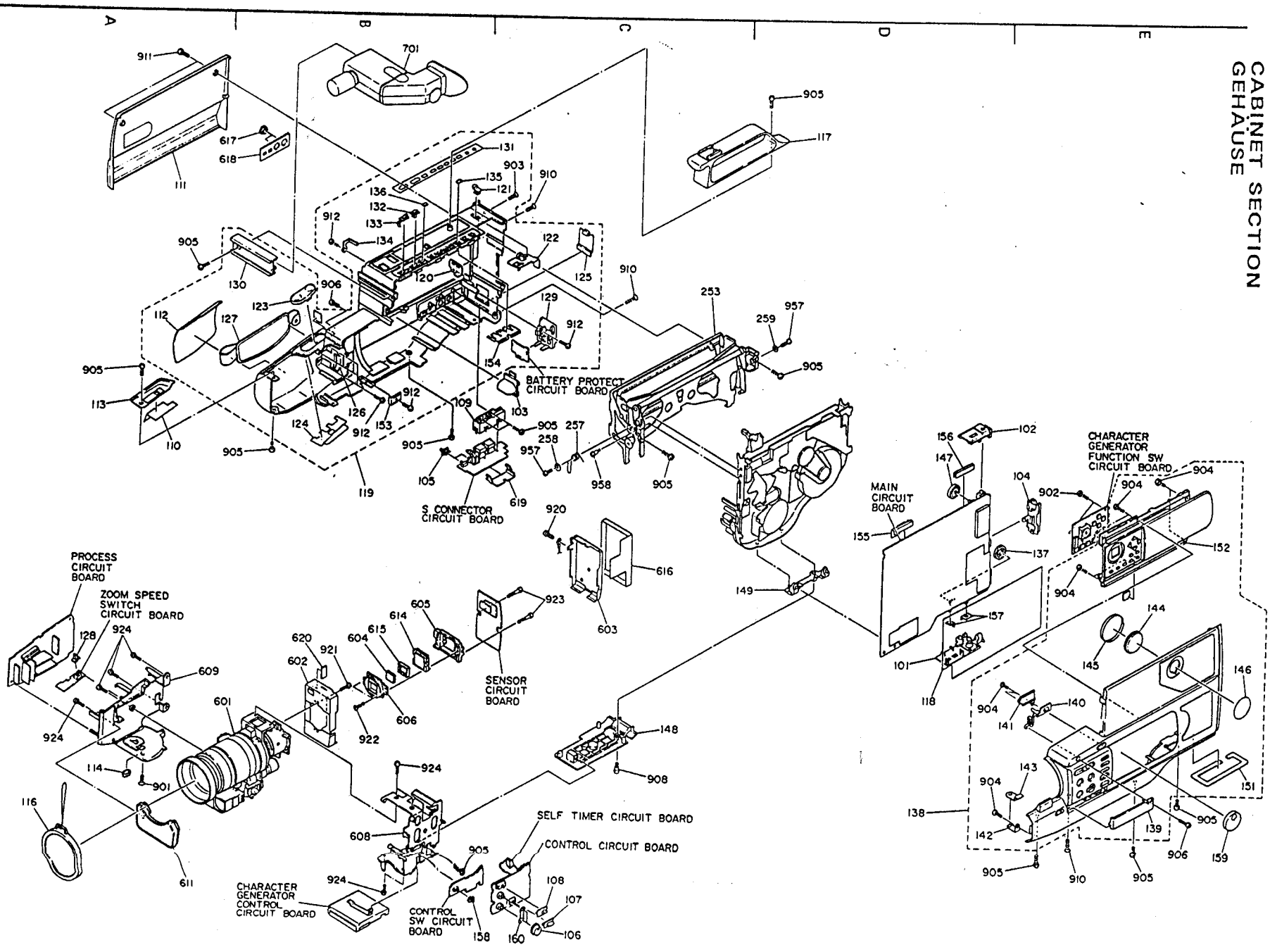


NOTE : MARK "■" IS DISCRETE COMPONENT.
: MARK "Ⓩ" IS LEADLESS (CHIP) JUMPER.

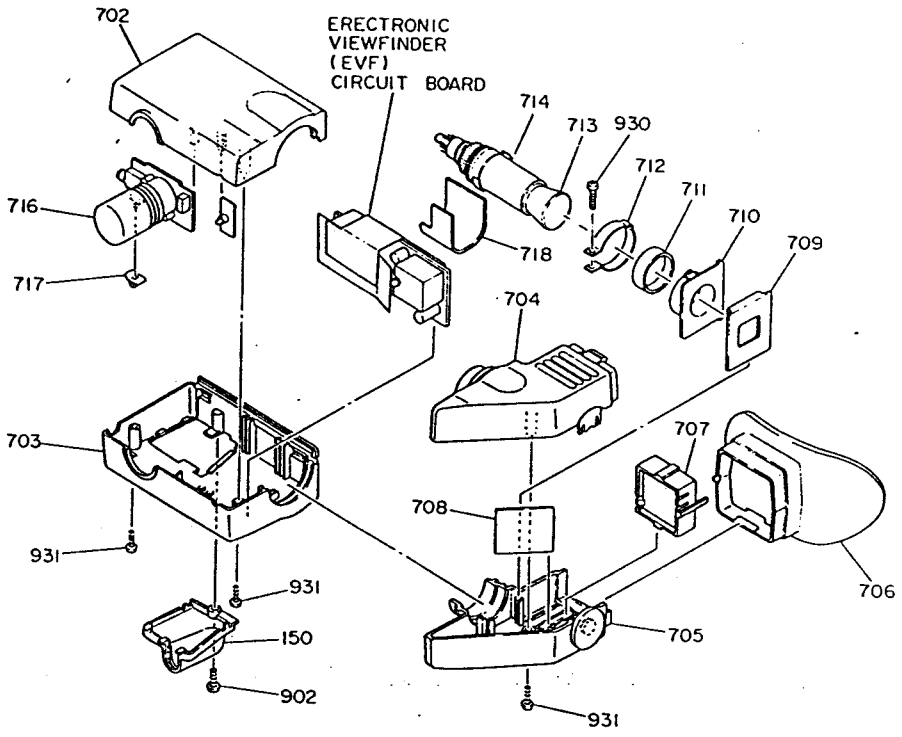
SCHEMATIC DIAGRAMS	PAGE
AUTO FOCUS · LED	5-21
AUDIO	5-29
CAPSTAN MOTOR DRIVE	5-43
CCD 1H DELAY	5-35
CHARA · ADD/AE CONTROL	5-15
CHARACTER GEN. CONTROL	5-45
CHARACTER GEN. FUNCTION SW	5-45
CONTROL	5-17
CONTORL SW · SELF TIMER	5-17
CYL. MOTOR DRIVE	5-27
CHROMA	5-33
ELECTRONIC VIEW FINDER · INDI	5-19
FUNCTION SW	5-28
FOCUS SENSOR	5-20
LUMINANCE	5-37
MIC	5-43
PB-/REC- EQ	5-35
PROCESS	5-11
POWER SUPPLY	5-22
PRE AMP	5-31
S-CONNECTOR	5-47
SENSOR	5-7
SWITCHING REGULATOR	5-22
SYSTEM CONTROL	5-25
SERVO	5-23
TROUBLE SENSOR	5-39

EXPLODED VIEW
AUSEINANDERGEZOGENE DARSTELLUNGEN

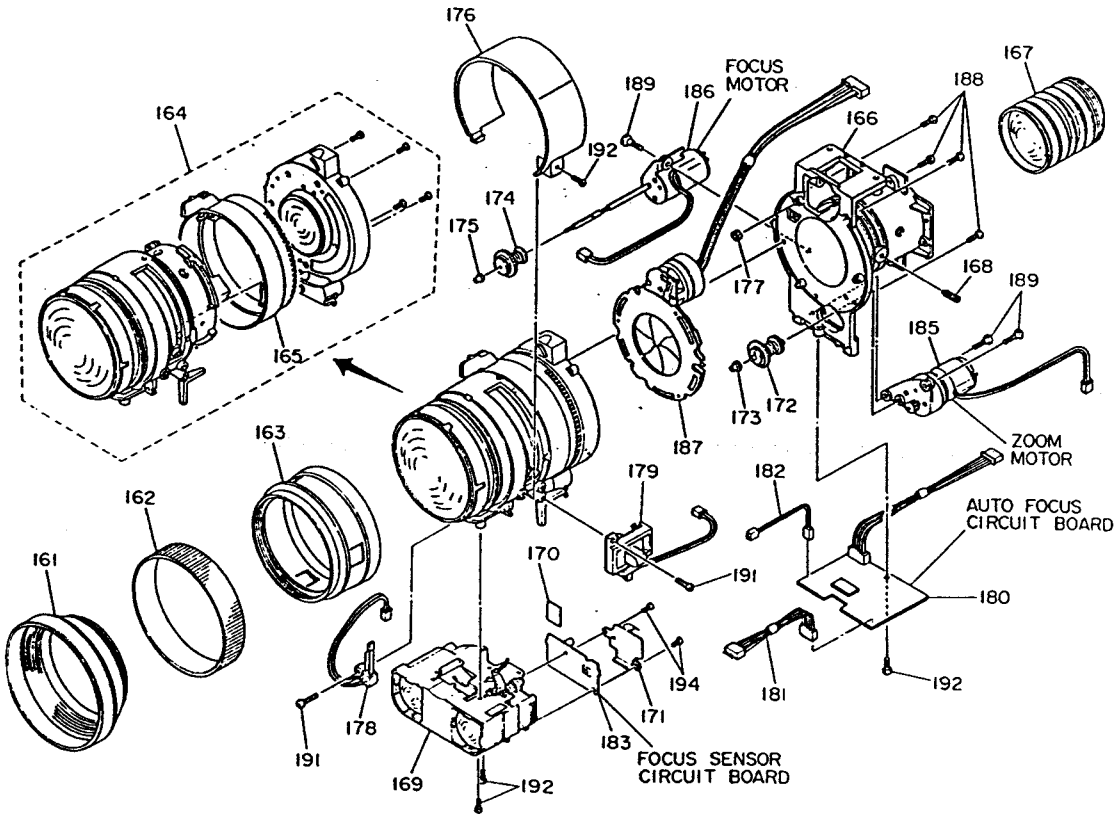
CABINET SECTION
GEHÄUSE



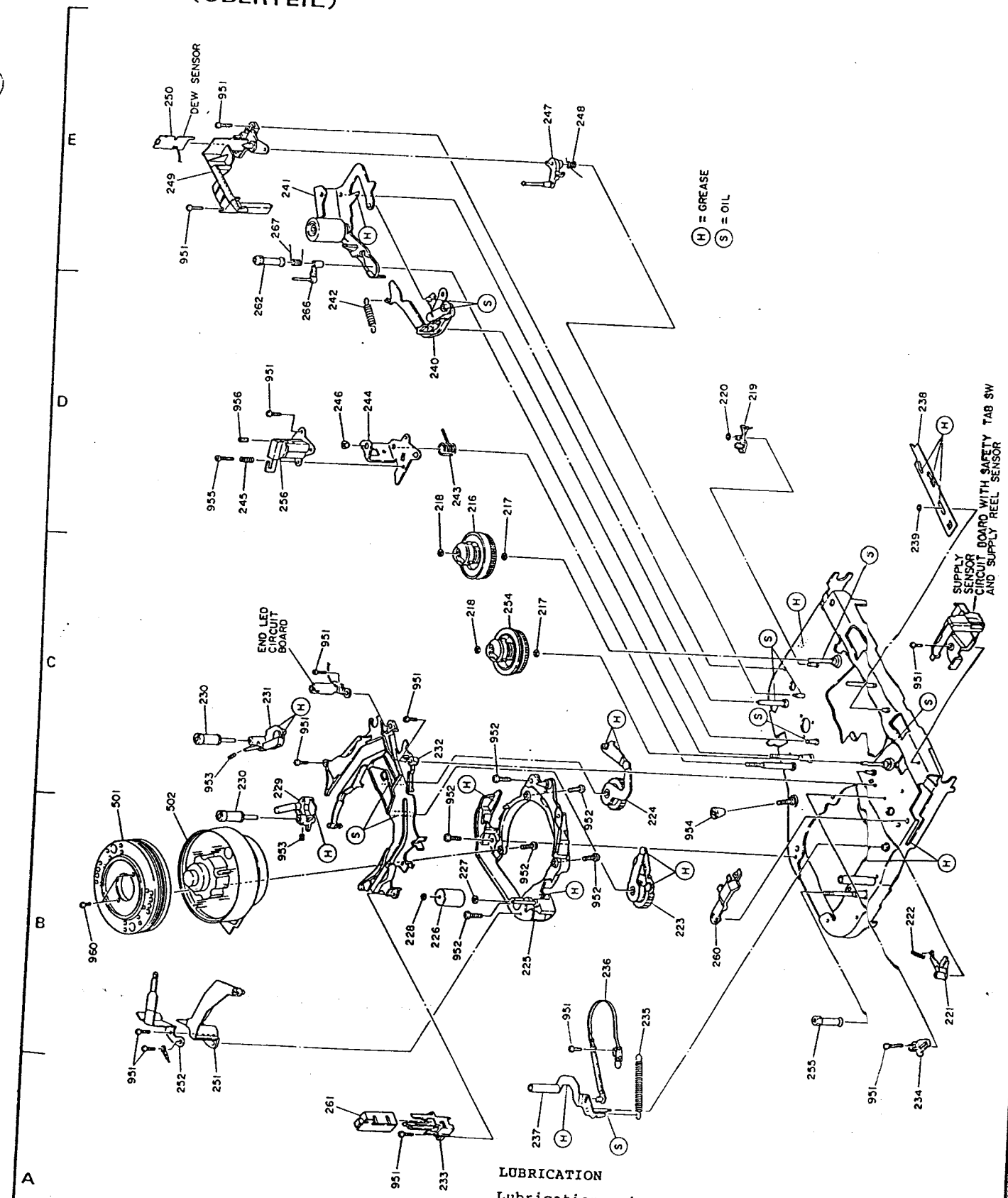
ELECTRONIC VIEWFINDER (EVF) SECTION
ELEKTRONISCHER SUCHER (EVF)



LENS SECTION
OBJEKTIV



CHASSIS (UPPER) SECTION
CHASSIS (OBERTEIL)



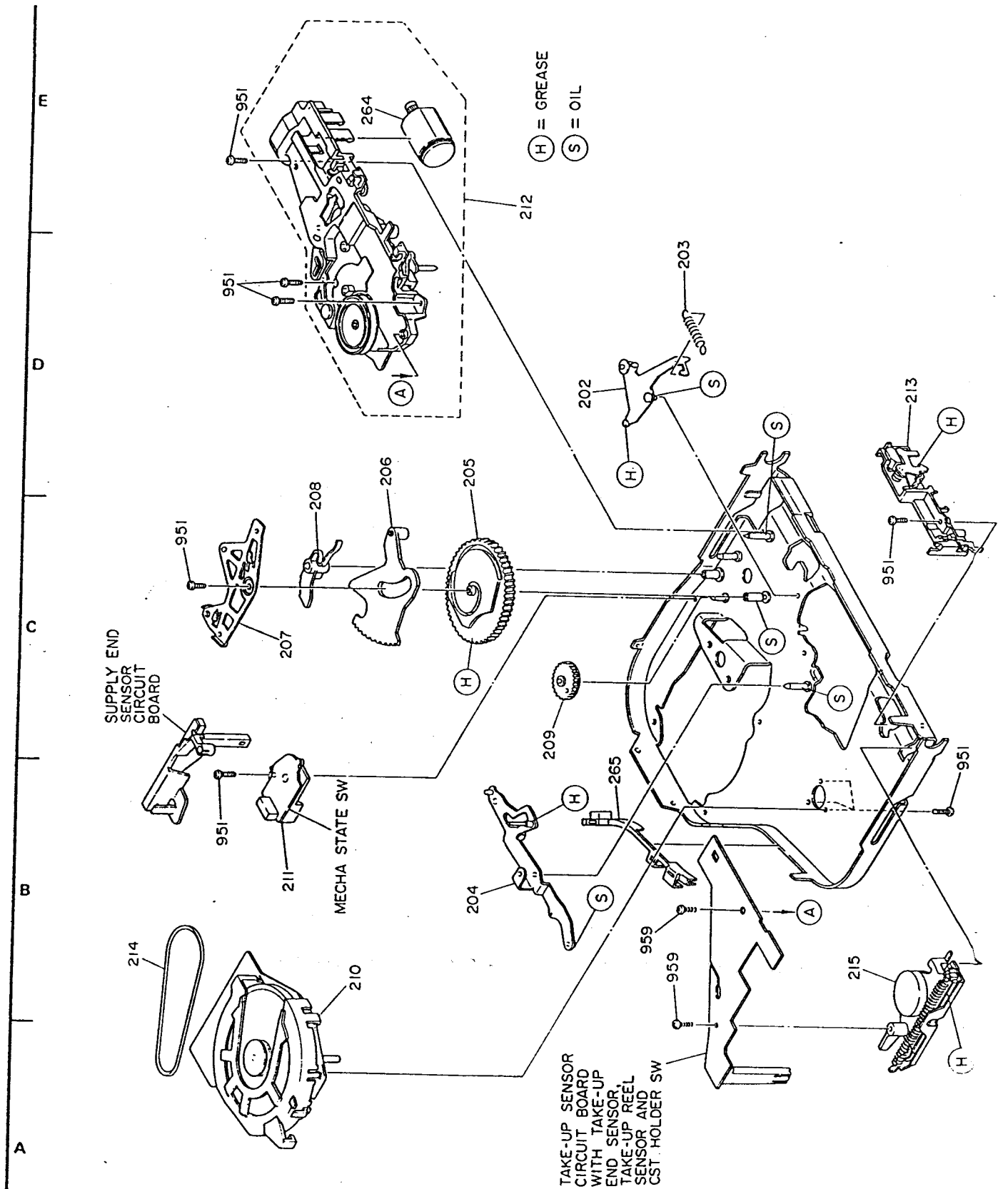
LUBRICATION

Lubrication points are shown in the exploded view diagrams by marks (Ⓢ, Ⓗ).
Lubricants shown in the diagram are as follows.

Ⓢ Sonic slider oil (#1600)

Ⓗ Hitazol (MO-138)

CHASSIS (LOWER) SECTION
CHASSIS (UNTERTEIL)



REPLACEMENT PARTS LIST
ERSATZTEILLISTE

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANISM SECTION
101	6429124	HOLDER FOR S7200(UK),7200E(F)
101	6439126	HOLDER FOR S7200E(AV),S7200E(AV)G
102	6439115	HOLDER
103	6439041	HOLDER,CONNECTOR
104	6014354	TERMINAL,BATTERY
105	6070321	KNOB,SLIDE
106	6070362	KNOB
107	6079941	KNOB
108	6079951	KNOB
109	6808612	HOLDER
110	7707251	SHEET,ISOLATOR
111	6248541	LID,CASSETTE
112	6018094	COVER,GRIP
113	6483172	LID,GRIP
114	6598792	CAP,AUTO FOCUS
116	6439141	CAP,HOOD
117	6336172	HANDLE
118	7707433	SPACER
119	6014545	COVER,SIDE(R) FOR S7200E(AV),S7200E(AV)G
119	6014547	COVER,SIDE(R) FOR S7200E(UK),S7200E(F)
120	7419332	BRACKET
121	6079902	KNOB,BATTERY
122	6808181	LEVER,LOCK
123	6079912	KNOB,TW
124	7703861	SPACER
125	6483431	LID,BATTERY
126	6074711	BUTTON,START
127	6336142	STRAP,HAND
128	6070381	KNOB,ZOOM
129	6808274	HOLDER,BATTERY
130	6439159	SHOE,EVF
131	6469237	SHEET
132	6079891	KNOB,FUNCTION
133	6070071	KNOB,POWER
134	6527291	SPRING
135	6074705	BUTTON
136	6074706	BUTTON
137	6070371	KNOB,VOLUME
138	6014892	COVER,SIDE(L)
139	6234271	COVER,BUTTON
140	6079923	KNOB,SELF TIMER
141	6808091	HOLDER,KNOB
142	7449021	BRACKET
143	7703781	SPACER
144	5411641	SPEAKER
145	7703751	SHEET
146	6439281	PAD
147	6079971	KNOB
148	6439161	FRAME,BOTTOM
149	6808611	HINGE,CBA
150	6439201	BOTTOM PIECE
151	6439292	PAD
152	6483033	DOOR,CHARA GENE
153	7441481	BRACKET
154	7707242	SPACER
155	7707222	SPACER
156	7707232	SPACER
157	7707011	SPACER
158	6079931	KNOB
159	6070082	KNOB
160	7707281	SPACER
161	6954425	HOOD
162	6954382	RUBBER,RING
163	6954383	RING
164	6954426	LENS,ZOOM(FRONT)
165	6954385	RING,ZOOM
166	6954386	HOLDER,LENS
167	6954387	LENS,REAR
168	6954388	SPECIAL SCREW
169	6954389	SENSOR BLOCK
170	6954391	SPACER
171	6954392	PLATE,SHIELD
172	6954393	GEAR,ZOOM
173	6954394	COLLAR,ZOOM GEAR
174	6954395	GEAR,AUTO FOCUS
175	6954396	COLLAR,AUTO FOCUS GEAR
176	6954397	COVER
177	6954398	COLLAR,RUBBER
178	6954399	SWITCH ASSY
179	6954401	BUTTON,AUTO FOCUS
180	1603971	PWB ASSY AUTO FOCUS
181	6954403	MINI CONNECTOR
182	6954404	MINI CONNECTOR
183	1603972	PWB ASSY FOCUS SENSOR
185	6954407	MOTOR,ZOOM
186	6954408	MOTOR,AUTO FOCUS
187	6954409	IRIS BLOCK
188	6954411	SCREW(3.5X6)
189	6954413	SPECIAL SCREW
191	6954416	SCREW(3X7)
192	6954417	SCREW(3.5X4.5)
194	6954421	SCREW(3X3)
202	7448673	ARM,LOCK
203	6555791	SPRING
204	7448692	ARM,COM
205	6436461	GEAR
206	6911612	GEAR
207	7449121	GUIDE
208	6805682	ARM,OPERATION
209	6436471	GEAR
210	5571562	MOTOR,CAPSTAN
211	5610731	SWITCH
212	6805732	REEL/LOADING BLOCK
213	6806076	HOLDER,LOCK
214	6356561	BELT
215	6806124	SLIDER
216	6415681	REEL,TAKE-UP
217	7787535	WASHER
218	7778859	POLYSLIDER WASHER
219	6806163	ARM
220	7799115	WASHER
221	6806322	BRAKE,SUB
222	6555813	SPRING
223	7448753	GEAR,LOADING(I)
224	7448782	GEAR,LOADING(O)
225	6911632	BASE,CYLINDER
226	7562052	ROLLER,IMPEDANCE
227	7784699	WASHER
228	7778859	POLYSLIDER WASHER
229	6911652	BASE,GUIDE ROLLER(I)
230	6344742	GUIDE ROLLER
231	6911672	BASE,GUIDE ROLLER(O)
232	6805662	PLATE

SYMBOL–NO	P–NO	DESCRIPTION
233	6806223	BASSE,HEAD
234	6806202	HOOK,SPRING
235	6555821	SPRING
236	7448814	BAND,TENTION
237	7448835	ARM
238	7448852	SLIDER
239	7786624	POLYSLIDER WASHER
240	7448863	LINK,PRESSER ROLLER
241	7448907	ARM,PRESSER ROLLER
242	6523242	SPRING
243	6551952	SPRING
244	7448932	ARM,HEAD
245	6523252	SPRING
246	7785673	NUT
247	6911697	ARM
248	6551961	SPRING
249	6806253	PLATE
250	0173051	DEW SENSOR
251	6806281	GUIDE
252	5793433	BRUSH
253	7448945	CASSETTE HOLDER ASSY
254	6894474	REEL,SUPPLY
255	4508237	GUIDE,TAPE
256	5443451	HEAD,AUDIO CONTROL
257	6550942	SPRING
258	7789931	WASHER
259	7789951	WASHER
260	6806471	COVER,GEAR
261	5445872	HEAD,FULL ERASE
262	4508235	GUIDE
264	5579071	MOTOR,LOADING
265	6806501	COVER
266	6915011	ARM
267	6552032	SPRING
501	5436155	CYLINDER,UPPER (CY-F3P)
502	5436164	CYLINDER,LOWER (CY-F3P)
601	6954043	LENS ZOOM
602	7495311	CASE,SHILD
603	7495304	PLATE,SHIELD
604	5781771	FILTER
605	6638231	BRACKET,SENSOR
606	6808161	LID
608	6808205	FRAME,LENS
609	6234231	COVER,LENS
611	6233981	COVER,AUTO FOCUS
614	5318231	MOS IMAGE DEVICE(HE98247G)
615	6592924	RUBBER
616	7495976	COVER,SHIELD
617	6809581	CAP
618	6469372	SHEET FOR S7200E(AV),S7200E(AV)G
618	6469374	SHEET FOR S7200E(UK),S7200E(F)
619	6808801	HOLDER,CBA
620	6562463	RUBBER
701	7056433	ELECTRONIC VIEWFINDER
702	6014247	CASE,UPPER
703	6014263	CASE,BOTTOM
704	6014311	UPPER NECK
705	6014283	NECK,BOTTOM
706	6014322	HOLDER
707	6958292	LENS,EVF
708	6693123	MIRROR
709	6800871	COVER,CRT
710	6800861	HOLDER,CRT

SYMBOL–NO	P–NO	DESCRIPTION
711	6597371	RUBBER,CRT
712	7415752	BRACKET,CRT
713	5312003	PICTURE TUBE
714	5242024	DEFLECTION YOKE
716	5420761	MICROPHONE
717	6079411	KNOB,WIND SWICH
718	6808361	COVER,CONNECTOR
901	0724304	SCREW 2.6X4
902	8699106	SCREW
903	0724306	SCREW 2.6X6
904	8691106	SCREW (2X6)
905	8699308	SCREW (2.6X8) BLACK
906	8699308	SCREW (2.6X8) BLACK
908	7784371	SCREW
910	7783611	SCREW
911	7784782	SCREW (3X4)
912	8691308	BT SCREW-2.6MMDX8MM
920	8650103	SCREW (2X3)
921	8691306	BT SCREW 2.6MM
922	7784011	SCREW,2X6
923	8612114	SCREW (2X14)
924	8691308	BT SCREW-2.6MMDX8MM
930	8711110	PAN HEAD SCREW - 2MMD X 10MM
931	8699106	SCREW
951	8741106	SCREW (2X6)
952	8741408	SCREW (B3X8)
953	7782611	SCREW
954	6911101	SCREW
955	8741110	BIND SCREW-2MMDX 10MM
956	7782619	SCREW 2X5
957	8741109	SCREW
958	7784371	SCREW
959	8691106	SCREW (2X6)
960	7784131	SCREW (3X8)

VTR SECTION

CAPASITORS

C 201	0209994	CERAMIC CHIP 0.33UF+80-20% 25V
C 202	0209994	CERAMIC CHIP 0.33UF+80-20% 25V
C 203	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 205	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 206	0201033	CERAMIC CHIP 150PF+-5% 50V
C 207	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 208	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 209	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 210	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 211	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 212	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 213	0201015	CERAMIC CHIP 5PF+-0.25% 50V
C 214	0201029	CERAMIC CHIP 68PF+-5% 50V
C 215	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 216	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 217	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 218	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 219	0201028	CERAMIC CHIP 56PF+-5% 50V
C 220	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 222	0201024	CERAMIC CHIP 27PF+-5% 50V
C 227	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 228	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 231	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 232	0201074	CERAMIC CHIP 0.056UF+80-20% 25V
C 234	0890022	CERAMIC CHIP 100PF+-5% 50V
C 236	0209963	CERAMIC CHIP 0.22UF+80-20% 16V

SYMBOL—NO	P—NO	DESCRIPTION
C 237	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 238	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 240	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 242	0201024	CERAMIC CHIP 27PF+-5% 50V
C 244	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 246	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 247	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 248	0201032	CERAMIC CHIP 120PF+-5% 50V
C 261	0256155	ELECTROLYTIC 10UF 16V
C 262	0256708	ELECTROLYTIC 47UF 10V
C 280	0256754	ELECTROLYTIC 220UF 10V
C 281	0256690	ELECTROLYTIC 10UF 16V
C 284	0256838	ELECTROLYTIC 10UF 10V
C 286	0201022	CERAMIC 15PF+-5% 50V
C 291	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 292	0201022	CERAMIC CHIP 15PF+-5% 50V
C 301	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 302	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 303	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 305	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 306	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 307	0249647	CERAMIC 0.1UF+-10% 16V
C 308	0249645	CERAMIC 0.047UF+-10% 16V
C 309	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 310	0201033	CERAMIC CHIP 150PF+-5% 50V
C 311	0201022	CERAMIC CHIP 15PF+-5% 50V
C 315	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 316	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 317	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 318	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 320	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 321	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 322	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 334	0201035	CERAMIC CHIP 220PF+-5% 50V
C 335	0201008	CERAMIC CHIP 0.015UF+-20% 50V
C 336	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 338	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 341	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 342	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 343	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 345	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 346	0201009	CERAMIC CHIP 0.022UF+80-20% 25V
C 361	0201008	CERAMIC CHIP 0.015+-20% 50V
C 431	0201062	CERAMIC CHIP 0.0068UF+-10% 50V
C 432	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 433	0201062	CERAMIC CHIP 0.0068UF+-10% 50V
C 434	0201008	CERAMIC CHIP 0.015UF+-20% 50V
C 435	0201008	CERAMIC CHIP 0.015UF+-20% 50V
C 437	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 438	0201105	CERAMIC CHIP 0.082UF+-10% 50V
C 439	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 440	0201059	CERAMIC CHIP 0.0033UF+-10% 50V
C 441	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 442	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 443	0201074	CERAMIC CHIP 0.056UF+80-20% 25V
C 446	0201056	CERAMIC CHIP 0.0015UF+-10% 50V
C 449	0201035	CERAMIC CHIP 220PF+-5% 50V
C 450	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 451	0201100	CERAMIC CHIP 0.033UF+-10% 50V
C 452	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 453	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 454	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 455	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 457	0209994	CERAMIC CHIP 0.33UF+80-20% 25V
C 458	0209995	CERAMIC CHIP 1.0UF+80-20% 16V

SYMBOL—NO	P—NO	DESCRIPTION
C 459	0209995	CERAMIC CHIP 1.0UF+80-20% 16V
C 582	0256163	ELECTROLYTIC 100UF 16V
C 583	0256163	ELECTROLYTIC 100UF 16V
C 585	0256163	ELECTROLYTIC 100UF 16V
C 587	0256163	ELECTROLYTIC 100UF 16V
C 590	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 591	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 592	0201057	CERAMIC CHIP 0.0022UF+-10% 50V
C 593	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 641	0201008	CERAMIC CHIP 0.015UF+-20% 50V
C 642	0201008	CERAMIC CHIP 0.015UF+-20% 50V
C 643	0201008	CERAMIC CHIP 0.015UF+-20% 50V
C 644	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 645	0201008	CERAMIC CHIP 0.015UF+-20% 50V
C 646	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 647	0201100	CERAMIC CHIP 0.033UF+-10% 50V
C 648	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 649	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 650	0201057	CERAMIC CHIP 0.0022UF+-10% 50V
C 651	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 652	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 653	0201100	CERAMIC CHIP 0.033UF+-10% 50V
C 654	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 655	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 656	0201059	CERAMIC CHIP 0.0033UF+-10% 50V
C 657	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 658	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 659	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 660	0201100	CERAMIC CHIP 0.033UF+-10% 50V
C 661	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 662	0201057	CERAMIC CHIP 0.0022UF+-10% 50V
C 664	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 665	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 666	0201061	CERAMIC CHIP 0.0047UF+-10% 50V
C 669	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 670	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 671	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 901	0201100	CERAMIC CHIP 0.033UF+-10% 50V
C 902	0209963	CERAMIC CHIP 0.22UF+80-20% 16V
C 903	0201025	CERAMIC CHIP 33PF+-5% 50V
C 904	0201100	CERAMIC CHIP 0.033UF+-10% 50V
C 908	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 909	0201100	CERAMIC CHIP 0.033UF+-10% 50V
C 910	0248686	CERAMIC 120PF+-5% 50V
C 911	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 913	0201024	CERAMIC CHIP 27PF+-5% 50V
C 915	0201100	CERAMIC CHIP 0.033UF+-10% 50V
C 916	0209963	CERAMIC CHIP 0.22UF+80-20% 16V
C 918	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 919	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C 920	0201054	CERAMIC 1000PF+-5% 50V
C1302	0256709	ELECTROLYTIC 100UF 6.3V
C1306	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C1308	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C1309	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C1310	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C1311	0201003	CERAMIC CHIP 0.001UF+-20% 50V
C1312	0201007	CERAMIC CHIP 0.01UF+-20% 50V
C1313	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C1331	0256689	ELECTROLYTIC 10UF 6.3V
C1402	0256688	ELECTROLYTIC 4.7UF 16V
C1403	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C1404	0256688	ELECTROLYTIC 4.7UF 16V
C1405	0201020	CERAMIC CHIP 10PF+-0.5% 50V
CT 901	5058493	TRIMMER 30PF

SYMBOL—NO	P—NO	DESCRIPTION
CT 902	5058493	TRIMMER 30PF
CT1401	5058485	TRIMMER 30PF
		RESISTORS
R 201	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 202	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 203	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 204	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 205	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 206	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 207	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 208	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R 210	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R 211	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 212	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 213	0103826	CHIP RESISTOR 39 OHM+-5% 0.1W
R 214	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 215	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R 219	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 223	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 224	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 225	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 226	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 227	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R 228	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 229	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 230	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 233	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 235	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 236	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 237	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 238	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 240	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 241	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 242	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 243	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R 244	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 245	0103821	CHIP RESISTOR 15 OHM+-5% 0.1W
R 246	0103829	CHIP RESISTOR 68OHM+-5% 0.1W
R 247	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 248	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 249	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 250	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 251	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 260	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 261	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 265	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 266	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 267	0103854	CHIP RESISTOR 8.2KOHM+-5% 0.1W
R 269	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 270	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 271	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 272	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 276	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 277	0103874	CHIP RESISTOR 390KOHM+-5% 0.1W
R 278	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 279	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 280	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 285	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 286	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 287	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R 288	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 291	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 292	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W

SYMBOL—NO	P—NO	DESCRIPTION
R 293	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 294	0103844	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 295	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 296	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 297	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 298	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 299	0103860	CHIP RESISTOR 27KOHM+-5% 01W
R 301	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 302	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 303	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R 304	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 305	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 306	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 308	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 309	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 310	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R 311	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 313	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 314	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 317	0103893	CHIP RESISTOR 75 OHM+-5% 0.1W
R 318	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 320	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 321	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 322	0103852	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 323	0103852	CHIP RESISTOR 56KOHM+-5% 0.1W
R 324	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 325	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 326	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 327	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 328	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 329	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 331	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 332	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 334	0103826	CHIP RESISTOR 39 OHM+-5% 0.1W
R 335	0103826	CHIP RESISTOR 39 OHM+-5% 0.1W
R 336	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 337	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 338	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 339	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 340	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 342	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 350	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 351	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 352	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 353	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 361	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 364	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 365	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 366	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 401	0170473	FUSE RESISTOR 4.7 OHM+-5% 1/4W
R 402	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 403	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 404	0103858	CHIP RESISITOR 18KOHM+-5% 0.1W
R 405	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 406	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 407	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 408	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 409	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R 410	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R 411	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 412	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 413	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 414	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 415	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 416	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W

SYMBOL—NO	P—NO	DESCRIPTION
R 417	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 418	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 420	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 421	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 422	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 423	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 424	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 425	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 426	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 427	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 428	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 429	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 430	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 431	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R 432	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 433	0103860	CHIP RESISTOR 27KOHM+-5% 01W
R 434	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 435	0103826	CHIP RESISTOR 39 OHM+-5% 0.1W
R 436	0103827	CHIP RESISTOR 47 OHM+-5% 0.1W
R 438	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 439	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 440	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 441	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 442	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 443	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 444	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 445	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 446	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 447	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 448	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 450	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 451	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 452	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 453	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 454	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 455	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 456	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 457	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 458	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 459	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 460	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 461	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 462	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 463	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 464	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 465	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 466	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 467	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 468	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 469	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 581	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 582	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 583	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 584	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 585	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 586	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R 587	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 588	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 589	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 590	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 591	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 592	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 593	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 594	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 595	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W

SYMBOL—NO	P—NO	DESCRIPTION
R 596	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 597	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 598	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 599	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R 601	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 602	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 603	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 604	0103829	CHIP RESISTOR 68 OHM+-5% 1/8W
R 605	0103829	CHIP RESISTOR 68 OHM+-5% 1/8W
R 606	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 607	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 608	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 609	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 610	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 611	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R 612	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 613	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 614	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 615	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 616	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 617	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 618	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 620	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 621	0103872	CHIP RESISTOR 270KOHM+-5% 0.1W
R 622	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 623	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R 624	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 625	0103875	CHIP RESISTOR 470KOHM+-5% 0.1W
R 626	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 627	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R 628	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R 629	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R 630	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 631	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 632	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 633	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 634	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 635	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 636	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 637	0103875	CHIP RESISTOR 470KOHM+-5% 0.1W
R 638	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 639	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 641	0103872	CHIP RESISTOR 270KOHM+-5% 0.1W
R 642	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R 643	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R 644	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 645	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 646	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 647	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 648	0103858	CHIP RESISTOR 18KOHM+-5% 0.1W
R 650	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R 651	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 652	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R 653	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 654	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 655	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 656	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R 657	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 658	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 659	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 660	0103867	CHIP RESISTOR 100KOHM+-5% 01W
R 661	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 664	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 665	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 666	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W

SYMBOL–NO	P–NO	DESCRIPTION
R 669	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 670	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 671	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 672	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 901	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 902	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 903	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 904	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 905	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 906	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 907	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 908	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 910	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 911	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 912	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 913	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 914	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 916	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 917	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 918	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 921	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 922	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 923	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 924	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 925	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 926	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 930	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 931	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 932	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 933	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 934	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 935	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 936	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 937	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 938	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 939	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 940	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 941	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R 942	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 943	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 944	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 945	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 946	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 947	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 948	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W
R 949	0103827	CHIP RESISTOR 47 OHM+-5% 0.1W
R 950	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R 951	0103872	CHIP RESISTOR 270KOHM+-5% 0.1W
R 953	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 954	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 955	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 956	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 957	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 959	0104111	METAL FILM 10KOHM+-1% 1/10W
R 960	0104111	METAL FILM 10KOHM+-1% 1/10W
R 961	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 962	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 963	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 964	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 965	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 966	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 969	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 970	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R 972	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 973	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W

SYMBOL–NO	P–NO	DESCRIPTION
R 974	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 975	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 976	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 978	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R 979	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 980	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 981	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 982	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 984	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 985	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 986	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R 988	0103873	CHIP RESISTOR 330KOHM+-5% 0.1W
R 989	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 991	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 992	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 993	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 994	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 995	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 996	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 997	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 998	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 999	0103827	CHIP RESISTOR 47 OHM+-5% 0.1W
R1301	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1302	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
R1303	0103871	CHIP RESISTOR 220KOHM+-5% 0.1W
R1304	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R1305	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1306	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R1307	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R1308	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1309	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R1310	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R1311	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1312	0103866	CHIP RESISTOR 82KOHM+-5% 0.1W
R1313	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R1314	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1315	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1316	0103829	CHIP RESISTOR 68OHM+-5% 0.1W
R1317	0103829	CHIP RESISTOR 68OHM+-5% 0.1W
R1318	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R1319	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1320	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R1331	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W
R1332	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W
R1333	0103893	CHIP RESISTOR 75 OHM+-5% 1/8W
R1334	0103861	CHIP RESISTOR 33KOHM+-5% 0.1W
R1335	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R1336	0103863	CHIP RESISTOR 47KOHM+-5% 01W
R1337	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R1401	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1402	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1403	0103836	CHIP RESISTOR 270 OHM+-5% 0.1W
R1405	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1406	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1407	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1408	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1410	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1412	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1413	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1418	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1419	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1421	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1422	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1423	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1424	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R1425	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1426	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1427	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1428	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1429	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1431	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1432	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1433	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1438	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1439	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1440	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1441	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1442	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1443	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1444	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1446	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1447	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1448	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1449	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1450	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1451	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1452	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1454	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1456	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R1457	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1458	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1459	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1460	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1461	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1462	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1463	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1464	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1465	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1466	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1467	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1468	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1469	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1470	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R1471	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R1473	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R1474	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R1475	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R1476	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1477	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R1478	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1479	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R1581	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R1582	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R1583	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
RT 201	5007434	SEMI VARIABLE 4.7KOHM
RT 202	5007432	SEMI VARIABLE 1KOHM
RT 203	5007432	SEMI VARIABLE 1KOHM
RT 401	5007436	SEMI VARIABLE 22KOHM
RT 402	5007438	SEMI VARIABLE 100KOHM
RT 601	5007452	SEMI VARIABLE 220KOHM
RT 602	5007439	SEMI VARIABLE 220KOHM
RT 603	5007452	SEMI VARIABLE 220KOHM
RT 605	5005584	SEMI VARIABLE 500KOHM
RT 901	5007445	SEMI VARIABLE 2.2KOHM
RV 402	5005582	VARIABLE 10KOHM

SEMI-CONDUCTORS

D 001	5380931	DIODE LED GL-450
D 201	5328303	DIODE MA152WK (MU)
D 202	5328303	DIODE MA152WK (MU)
D 302	5328303	DIODE MA152WK (MU)
D 303	5328303	DIODE MA152WK (MU)
D 403	5328304	DIODE MA152WA (MO)
D 404	5328303	DIODE MA152WK (MU)
D 405	5328303	DIODE MA152WK (MU)
D 406	5328303	DIODE MA152WK (MU)
D 581	5331671	DIODE DS135D-FA3
D 582	5332542	DIODE A81-04F
D 583	5332542	DIODE A81-04F
D 584	5332542	DIODE A81-04F
D 585	5332542	DIODE A81-04F
D 586	5328304	DIODE MA152WA (MO)
D 587	5328304	DIODE MA152WA (MO)
D 601	5328303	DIODE MA152WK (MU)
D 602	5328303	DIODE MA152WK (MU)
D 603	5328303	DIODE MA152WK (MU)
D 604	5328303	DIODE MA152WK (MU)
D 605	5328303	DIODE MA152WK (MU)
D 901	5328303	DIODE MA152WK (MU)
D 902	5328304	DIODE MA152WA (MO)
D 903	5328303	DIODE MA152WK (MU)
D 904	5332704	DIODE 1SS165
D 905	5328303	DIODE MA152WK (MU)
D 906	5328304	DIODE MA152WA (MO)
D 908	5328304	DIODE MA152WA (MO)
D 909	5328304	DIODE MA152WA (MO)
D 911	5328303	DIODE MA152WK (MU)
D 913	5328303	DIODE MA152WK (MU)
D 914	5328304	DIODE MA152WA (MO)
D 915	5328303	DIODE MA152WK (MU)
D 916	5328304	DIODE MA152WA (MO)
D 919	5328304	DIODE MA152WA (MO)
D 920	5331671	DIODE DS135D-FA3
D 921	5328303	DIODE MA152WK (MU)
D 922	5328303	DIODE MA152WK (MU)
D 923	5328303	DIODE MA152WK (MU)
D 927	5328303	DIODE MA152WK (MU)
D 928	5328303	DIODE MA152WK (MU)
D 930	5332542	DIODE A81-04F
D 931	5330133	DIODE 1S2076
D1301	5328303	DIODE MA152WK (MU)
D1401	5328303	DIODE MA152WK (MU)
IC 201	1370655	MODULE HT4967D
IC 202	1370603	IC HN7145B
IC 203	1341551	IC P2010
IC 204	1370192	IC HT7139A
IC 205	1380064	PWB ASSY FLY ERASE(HES8121C)
IC 206	1380273	PWB ASSY LPF/DELAY(HES82018)
IC 207	1380633	PWB ASSY HPF/REC EQ(HES8215AB)
IC 208	1371261	IC HN5329
IC 301	5388853	IC HT4919B
IC 302	1380792	PWB ASSY CCD 1H DELAY(HES8219A)
IC 303	1380811	PWB ASSY DELAY/GAIN SW(HES8218)
IC 401	5363322	IC BA5114LS
IC 402	5364201	IC UPC1513HA
IC 581	1371191	IC HT7161
IC 601	1350461	IC HD49744
IC 602	1341941	IC LB1684H
IC 603	5369181	IC M5218L
IC 901	5306832	IC HD404708-A45H
IC 902	5302703	IC M50725-152SP
IC 903	1342131	IC UPD6145C
IC 905	5361944	IC S8053ALR
IC 906	1342421	IC MC147805

SYMBOL–NO	P–NO	DESCRIPTION
IC 907	1342411	IC S-8054ALB
IC 908	5300811	IC TA7291S
IC 909	1380301	PWB ASSY TROUBLE DET(BX7596F)
IC 910	1380312	PWB ASSY SYNC/OVER(BX7686F)
IC 911	1342411	IC S-8054ALB
IC1301	1350231	IC CX20095A
IC1401	5306762	IC HD4074008
IC1403	5362055	IC M50452A-006P
IC1404	5305272	IC RC74HC157
IC1406	1342451	IC M6M80021L
IC1407	1342451	IC M6M80021L
LED 901	5381001	LED SLR-34URC5
Q 001	5324661	TRANSISTOR PT-483F1
Q 002	5333952	TRANSISTOR ON2170LH
Q 003	5324661	TRANSISTOR PT-483F1
Q 004	5333391	TRANSISTOR NJL5161K
Q 201	5328721	TRANSISTOR 2SD1328(1DS)
Q 202	5328721	TRANSISTOR 2SD1328(1DS)
Q 203	5328721	TRANSISTOR 2SD1328(1DS)
Q 204	5328721	TRANSISTOR 2SD1328(1DS)
Q 205	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 206	5326461	TRANSISTOR XN4501(5H)
Q 208	5326206	TRANSISTOR FMC2(C2)
Q 209	5326511	TRANSISTOR 2SB1188(BCRT)
Q 210	5328793	TRANSISTOR DTC144K-26
Q 213	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 215	5326206	TRANSISTOR FMC2(C2)
Q 216	5326102	TRANSISTOR FMW2(W2)
Q 217	5328335	TRANSISTOR 2SB709A-RS-T(AR)
Q 218	5328793	TRANSISTOR DTC144K-26
Q 220	5326101	TRANSISTOR FMW1(W1)
Q 221	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 222	5326541	TRANSISTOR IMH2(H2)
Q 225	5328335	TRANSISTOR 2SB709A-RS-T(AR)
Q 227	5326101	TRANSISTOR FMW1(W1)
Q 228	5328793	TRANSISTOR DTC144K-26
Q 230	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 232	5328793	TRANSISTOR DTC1441C-26
Q 234	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 238	5327073	TRANSISTOR DTC144ES
Q 291	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 301	5328791	TRANSISTOR DTC124K(25)
Q 302	5326101	TRANSISTOR FMW1(W1)
Q 304	5328791	TRANSISTOR DTC124K(25)
Q 305	5326253	TRANSISTOR DTC343TK(H03)
Q 306	5326101	TRANSISTOR FMW1(W1)
Q 307	5328793	TRANSISTOR DTC144K-26
Q 308	5328792	TRANSISTOR DTA124K(15)
Q 309	5328792	TRANSISTOR DTA124K(15)
Q 310	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 311	5326206	TRANSISTOR FMC2(C2)
Q 312	5328793	TRANSISTOR DTC144K-26
Q 313	5328793	TRANSISTOR DTC144K-26
Q 314	5328793	TRANSISTOR DTC144K-26
Q 315	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 316	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 318	5328721	TRANSISTOR 2SD1328(1DS)
Q 402	5326201	TRANSISTOR FMG2(G2)
Q 404	5328351	TRANSISTOR 2SD602R(WR)
Q 405	5328793	TRANSISTOR DTC144K-26
Q 406	5328793	TRANSISTOR DTC144K-26
Q 407	5328793	TRANSISTOR DTC144K-26
Q 408	5326206	TRANSISTOR FMC2(C2)
Q 409	5326253	TRANSISTOR DTC343TK(H03)
Q 410	5328971	TRANSISTOR 2SC2412KBRST(BR)

SYMBOL–NO	P–NO	DESCRIPTION
Q 411	5328793	TRANSISTOR DTC144K-26
Q 412	5328351	TRANSISTOR 2SD602R(WR)
Q 413	5328792	TRANSISTOR DTA124K(15)
Q 414	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 415	5328335	TRANSISTOR 2SB709A-RS-T(AR)
Q 416	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 581	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 582	5328792	TRANSISTOR DTA124K(15)
Q 583	1321011	TRANSISTOR 2SB1182(R)
Q 584	1321011	TRANSISTOR 2SB1182(R)
Q 585	1321121	TRANSISTOR 2SD1758(R)
Q 586	5328335	TRANSISTOR 2SB709A-RS-T(AR)
Q 587	1321011	TRANSISTOR 2SB1182(R)
Q 588	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 589	1321011	TRANSISTOR 2SB1182(R)
Q 590	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 591	5324083	TRANSISTOR 2SB962(P,E)
Q 592	5328335	TRANSISTOR 2SB709A-RS-T(AR)
Q 593	5328335	TRANSISTOR 2SB709A-RS-T(AR)
Q 594	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 601	5326206	TRANSISTOR FMC2(C2)
Q 602	5326201	TRANSISTOR FMG2(G2)
Q 603	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 902	5328793	TRANSISTOR DTC144K-26
Q 904	5328793	TRANSISTOR DTC144K-26
Q 905	5328211	TRANSISTOR 2SA1121C(SC)
Q 906	5328792	TRANSISTOR DTA124K(15)
Q 908	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 909	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 910	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 911	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 912	5328971	TRANSISTOR 2SC2412KBRST(BR)
Q 913	5328792	TRANSISTOR DTA124K(15)
Q 915	5328793	TRANSISTOR DTC144K-26
Q 916	5328335	TRANSISTOR 2SB709A-RS-T(AR)
Q 917	5328793	TRANSISTOR DTC144K-26
Q 918	5328793	TRANSISTOR DTC144K-26
Q 919	5328793	TRANSISTOR DTC144K-26
Q 920	5328793	TRANSISTOR DTC144K-26
Q 922	5328335	TRANSISTOR 2SB709A-RS-T(AR)
Q 926	5305131	IC TC4SU69F(C6)
Q 927	5305131	IC TC4SU69F(C6)
Q1301	5326702	TRANSISTOR IMZ2
Q1302	5328335	TRANSISTOR 2SB709A-RS-T
Q1303	5328971	TRANSISTOR 2SC2412KBRST
Q1304	5328971	TRANSISTOR 2SC2412KBRST
Q1305	5326541	TRANSISTOR IMH2
Q1306	5326541	TRANSISTOR IMH2
Q1307	5328793	TRANSISTOR DTC144K-26
Q1308	5328971	TRANSISTOR 2SC2412KBRST
Q1401	5328971	TRANSISTOR 2SC2412KBRST
Q1402	5328971	TRANSISTOR 2SC2412KBRST
Q1403	5328335	TRANSISTOR 2SB709A-RS-T
TH 201	5340363	THERMISTOR ERTD2FHL
ZD 401	5337015	DIODE MA3100L(10L)
ZD 901	5337012	DIODE MA3056M(56M)
ZD 902	5337011	DIODE MA3075L(75L)
ZD 903	5337011	DIODE MA3075L(75L)
ZD 904	5337011	DIODE MA3075L(75L)
ZD 905	5337012	DIODE MA3056M(56M)
ZD1401	5339212	DIODE RD3.6M82
		TRANSFORMER
T 401	5261422	TRANSFORMER,BIAS

SYMBOL–NO	P–NO	DESCRIPTION
T 402	5261423	TRANSFORMER,BIAS
		COILS
L 201	5159207	CHOKE COIL 100UH
L 202	5152616	CHOKE COIL 470UH
L 206	5159207	CHOKE COIL 100UH
L 209	5159207	CHOKE COIL 100UH
L 210	5159207	CHOKE COIL 100UH
L 211	5159207	CHOKE COIL 100UH
L 212	5159207	CHOKE COIL 100UH
L 213	5159207	CHOKE COIL 100UH
L 214	5159207	CHOKE COIL 100UH
L 216	5159204	CHOKE COIL 56UH
L 217	5159207	CHOKE COIL 100UH
L 218	5159207	CHOKE COIL 100UH
L 221	5159207	CHOKE COIL 100UH
L 222	5159196	CHOKE COIL 15UH
L 227	5159207	CHOKE COIL 100UH
L 228	5159218	CHOKE COIL 820UH
L 229	5159227	CHOKE COIL 56UH
L 230	5159142	CHOKE COIL 12UH
L 291	5159249	CHOKE COIL 220UH
L 301	5153003	CHOKE COIL 15UH
L 302	5152976	CHOKE COIL 8.2MH
L 303	5159207	CHOKE COIL 100UH
L 306	5159203	CHOKE COIL 47UH
L 307	5159207	CHOKE COIL 100UH
L 308	5159207	CHOKE COIL 100UH
L 310	5153008	COIL,CHOKE 39UH+-10%
L 311	5159099	CHOKE COIL 82UH
L 401	5152815	CHOKE COIL 22MH+-5%
L 402	5152971	CHOKE COIL 5.6MH
L 403	5159207	CHOKE COIL 100UH
L 404	5159207	CHOKE COIL 100UH
L 581	5153144	COIL,CHOKE 47UH+-20%
L 582	5153144	COIL,CHOKE 47UH+-20%
L 583	5152943	COIL,CHOKE 390UH
L 585	5153145	COIL,CHOKE 100UH+-10%
L 586	5153144	COIL,CHOKE 47UH+-20%
L 587	5153145	COIL,CHOKE 100UH+-10%
L 588	5153144	COIL,CHOKE 47UH+-20%
L 589	5152943	COIL,CHOKE 390UH(FOR UK,E)
L 901	5159202	CHOKE COIL 39UH
L 902	5159212	CHOKE COIL 220UH
L 903	5159201	CHOKE COIL 33UH
L1301	5159207	CHOKE COIL 100UH
L1401	5152607	CHOKE COIL 100UH+-10%
L1402	5159249	CHOKE COIL 22UH+-10%
		CRYSTALS
CX 901	5781492	CRYSTAL
CX 902	5784471	OSCILLATOR
CX 904	5784581	OSCILLATOR
CX1401	5781832	CRYSTAL
		MISCELLAEOUS
CP 201	5124347	COIL
CP 202	5163315	FILTER
CP 203	5163932	FILTER
CP 204	5163823	FILTER
CP 205	5163532	FILTER
CP 301	5164721	FILTER

SYMBOL–NO	P–NO	DESCRIPTION
CP 302	5164711	FILTER
CP 303	5163482	LOW PASS FILTER
DL 301	5786092	DELAY LINE
F 901	5721952	FUSE 2A
JK 401	5694721	SOCKET
JK 402	5694811	MINI JACK FOR S7200E(AV),S7200E(AV)G
JK 403	5671882	MINI JACK
JK 901	5693501	JACK,DC
JK1301	5694741	SOCKET
JK1302	5694741	SOCKET FOR S7200E(AV),S7200E(AV)G
LD1301	5380692	LED SLR34UR12
QF 901	5721804	IC PROTECTER
S 201	5621551	SWITCH FOR S7200E(AV),S7200(AV)G
S 401	5621551	SWITCH
S 903	5635113	SWITCH
S 906	5635113	SWITCH
S 907	5635113	SWITCH
S 908	5635113	SWITCH
S 909	5635113	SWITCH
S 910	5635113	SWITCH
S 911	5635113	SWITCH
S 913	5635113	SWITCH
S 915	5635113	SWITCH
S 916	5622811	SLIDE SWITCH
S1301	5621551	SWITCH
S1302	5621551	SWITCH
S1401	5634861	SWITCH
S1402	5634861	SWITCH
S1403	5634861	SWITCH
S1404	5634861	SWITCH
S1405	5634861	SWITCH
S1406	5634861	SWITCH
S1407	5634861	SWITCH
S1408	5634861	SWITCH
S1409	5634861	SWITCH
S1410	5610742	SWITCH
S1411	5634861	SWITCH
S1412	5634861	SWITCH
S 001	5601512	SWITCH
S 003	5635331	SWITCH
S 004	5635331	SWITCH
		CAMERA SECTION
		CAPASITORS
C 001	0256381	ELECTROLYTIC 3.3UF 16V
C 002	0256694	ELECTROLYTIC 22UF 6.3V
C 003	0256686	ELECTROLYTIC 2.2UF 35V
C 005	0256392	ELECTROLYTIC 22UF 6.3V
C 006	0256835	ELECTROLYTIC 1UF 50V
C 007	0256392	ELECTROLYTIC 22UF 6.3V
C 008	0256392	ELECTROLYTIC 22UF 6.3V
C 009	0256392	ELECTROLYTIC 22UF 6.3V
C 010	0256392	ELECTROLYTIC 22UF 6.3V
C 011	0256398	TANTALUM 68UF 6.3V
C 012	0256166	ELECTROLYTIC 47MF 4V
C 013	0256711	ELECTROLYTIC 47UF 6.3V
C 014	0256711	ELECTROLYTIC 47UF 6.3V
C 015	0256709	ELECTROLYTIC 100UF 6.3V
C 016	0256163	ELECTROLYTIC 100UF 16V

SYMBOL-NO	P-NO	DESCRIPTION
C 017	0256694	ELECTROLYTIC 22UF 6.3V
C 030	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 031	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 032	0201804	TUNTALUM 0.33UF+-0.25% 35V
C 033	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 034	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 035	0201804	TUNTALUM 0.33UF+-0.25% 35V
C 036	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 037	0201032	CERAMIC CHIP 120PF+-5% 50V
C 038	0201032	CERAMIC CHIP 120PF+-5% 50V
C 039	0201032	CERAMIC CHIP 120PF+-5% 50V
C 040	0209989	CERAMIC CHIP 0.1UF+-20% 25V
C 041	0201032	CERAMIC CHIP 120PF+-5% 50V
C 042	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 043	0201024	CERAMIC CHIP 27PF+-5% 50V
C 044	0201024	CERAMIC CHIP 27PF+-5% 50V
C 047	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 048	0201013	CERAMIC CHIP 3PF+-0.25% 50V
C 049	0201054	CERAMIC CHIP 1000PF+-10% 50V
C 050	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 051	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 052	0201023	CERAMIC CHIP 18PF+-5% 50V
C 053	0201023	CERAMIC CHIP 18PF+-5% 50V
C 054	0201023	CERAMIC CHIP 18PF+-5% 50V
C 055	0201023	CERAMIC CHIP 18PF+-5% 50V
C 056	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 057	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 058	0201023	CERAMIC CHIP 18PF+-5% 50V
C 059	0201023	CERAMIC CHIP 18PF+-5% 50V
C 060	0201023	CERAMIC CHIP 18PF+-5% 50V
C 061	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 062	0201023	CERAMIC CHIP 18PF+-5% 50V
C 063	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 064	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 065	0201062	CERAMIC CHIP 0.0068UF+-10% 50V
C 066	0201039	CERAMIC CHIP 470PF+-5% 50V
C 067	0201055	CERAMIC CHIP 0.001UF+80-20% 50V
C 101	0256692	ELECTROLYTIC 22UF 16V
C 102	0256834	ELECTROLYTIC 10UF 16V
C 103	0256690	ELECTROLYTIC 10UF 16V
C 104	0256157	CAPACITOR ELECTROLYTIC 33MF 16V
C 105	0256690	ELECTROLYTIC 10UF 16V
C 106	0256161	ELECTROLYTIC 22UF 6.3V
C 107	0256686	ELECTROLYTIC 2.2UF 35V
C 109	0256151	ELECTROLYTIC 1UF 50V
C 110	0256690	ELECTROLYTIC 10UF 16V
C 111	0256692	ELECTROLYTIC 22UF 16V
C 112	0256686	ELECTROLYTIC 2.2UF 35V
C 117	0256783	ELECTROLYTIC 100UF 16V
C 122	0256711	ELECTROLYTIC 47UF 6.3V
C 123	0256690	ELECTROLYTIC 10UF 16V
C 125	0248692	CERAMIC 220PF+-5% 50V
C 126	0248692	CERAMIC 220PF+-5% 50V
C 601	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 602	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 603	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
C 604	0201006	CERAMIC CHIP 0.01UF+80-20% 50V
CT 001	5Q58541	TRIMMER 35PF
		RESISTORS
R 001	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 002	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 003	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 004	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 005	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 006	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 007	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 008	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 009	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 010	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 011	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 012	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 013	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 014	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 015	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 017	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 018	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 020	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 021	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 023	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 024	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 025	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 026	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 027	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 028	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 029	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 030	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 031	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 032	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 038	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 039	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 040	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 041	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 042	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 043	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 044	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 045	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 046	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 047	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 048	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R 049	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 050	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 051	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 052	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 053	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 054	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 055	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 056	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 058	0103837	CHIP RESISTOR 330 OHM+-5% 0.1W
R 059	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R 060	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 061	0103828	CHIP RESISTOR 56 OHM+-5% 0.1W
R 063	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 064	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 065	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R 066	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 067	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 068	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 069	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 601	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 602	0103842	CHIP RESISTOR 820 OHM+-5% 0.1W
R 603	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 604	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 605	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 606	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 607	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R 608	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R 609	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R 610	0103833	CHIP RESISTOR 150 OHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R 611	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 612	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 613	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 614	0103850	CHIP RESISTOR 3.9KOHM+-5% 0.1W
R 615	0103840	CHIP RESISTOR 560 OHM+-5% 0.1W
R 616	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R 617	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R 619	0103839	CHIP RESISTOR 470OHM+-5% 0.1W
RT 001	5040049	TRIMMER
RT 002	5040049	TRIMMER
RV 601	5002011	VARIABLE 10KOHM
RV 602	5005582	VARIABLE 10KOHM
		SEMI-CONDUCTORS
D 001	5331031	DIODE 1SV68-01
D 101	5330133	DIODE 1S2076 SI 100MHZ 250MW SNS
D 102	5330134	DIODE 1S2076 SI 100MHZ 250MW SNS
D 103	5330133	DIODE 1S2076 SI 100MHZ 250MW SNS
D 601	5339141	DIODE 1SS270
D 602	5339141	DIODE 1SS270
IC 001	5318231	MOS IMAGE DEVICE HE98247G
IC 002	5388931	MODULE HT5640
IC 003	1387477	MODULE HES8110H
IC 004	5305042	IC HD62991CA
IC 005	5300581	IC HA118002FP
IC 006	5304292	IC HA118031A
IC 007	5305131	IC TC4SU69F
IC 101	5388955	IC HN5678D
IC 102	1378275	PWB ASSY LUMA FILTER/ENHANCER(HTS5672D)
IC 103	1371311	IC HT5671B
IC 104	1370961	IC HT5644
IC 105	5388992	IC HT5677A
IC 106	1378552	PWB ASSY ZOOM DRIVER(HT5737A)
IC 107	5386001	IC HT5318
IC 108	1342441	IC LM2940CT-5.0
IC 109	5388948	IC HN5676G
IC 110	5388963	IC HT5679B
LED 601	5381943	LED GL1PR111
Q 002	5328251	TRANSISTOR 2SA1122-CD
Q 003	5328192	TRANSISTOR 2SC2462LD
Q 101	5323961	TRANSISTOR DTC124ES
Q 102	5323961	TRANSISTOR DTC124ES
Q 103	5327072	TRANSISTER DTA124ES
Q 104	5323961	TRANSISTOR DTC124ES
Q 601	5328791	TRANSISTOR DTC124K(25)
Q 701	5324821	PHOTO TRANSISTOR PN268
Q 901	5328251	TRANSISTOR 2SA1122-CD
Q 902	5328192	TRANSISTOR 2SC2462LD
Q 903	5328192	TRANSISTOR 2SC2462LD
		COILS
L 101	5152337	CHOKE COIL 100UH+-10%
L 102	5152337	CHOKE COIL 100UH+-10%
L 103	5152612	CHOKE COIL 220UH
L 104	5152612	CHOKE COIL 220UH
L 105	5152962	CHOKE COIL 220UH
L 106	5152962	CHOKE COIL 220UH
		CRYSTALS
X 001	5781931	CRYSTAL
		MISCELLANEOUS

SYMBOL-NO	P-NO	DESCRIPTION
CP 001	5172253	FILTER
CP 002	5172253	FILTER
CP 003	5172253	FILTER
CP 004	5172253	FILTER
CP 101	5162841	TRAP COIL
RM 101	5006364	VARIABLE BLOCK
SW 101	5635291	SWITCH
SW 102	5635292	SWITCH
SW 103	5635292	SWITCH
SW 601	5635113	SWITCH
SW 602	5633673	SWITCH
SW 603	5633911	SWITCH
SW 604	5633911	SWITCH
SW 605	5633911	SWITCH
SW 606	5633911	SWITCH
SW 607	5633911	SWITCH
SW 608	5633911	SWITCH
SW 609	5621441	SWITCH
SW 610	5621471	SWICH
SW 611	5634801	SWITCH
SW 612	5634801	SWITCH
SW 613	5634801	SWITCH
SW 614	5622811	SLIDE SWITCH
SW 701	5621452	SWITCH
		EVF SECTION
		CAPASITORS
C 801	0256170	ELECTROLYTIC 100UF 10V
C 802	0256690	ELECTROLYTIC 10UF 16V
C 804	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 805	0256170	ELECTROLYTIC 100UF 10V
C 806	0256782	ELECTROLYTIC 220UF 10V
C 807	0256690	ELECTROLYTIC 10UF 16V
C 809	0256170	ELECTROLYTIC 100UF 10V
C 810	0256690	ELECTROLYTIC 10UF 16V
C 811	0256156	ELECTROLYTIC 22UF 16V
C 814	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 815	0256752	ELECTROLYTIC 3.3UF 63V
C 816	0201997	CERAMIC DISC 0.1UF+80-20% 50V
C 817	0201035	CERAMIC CHIP 220PF+-5% 50V
C 818	0201029	CERAMIC CHIP 68PF+-5% 50V
C 819	0201062	CERAMIC CHIP 0.0068UF+-10% 50V
C 820	0256164	ELECTROLYTIC 0.1UF 50V
C 821	0256687	ELECTROLYTIC 3.3UF 25V
C 822	0256685	ELECTROLYTIC 1UF 50V
C 823	0201065	CERAMIC CHIP 0.022UF+-10% 25V
C 826	0256170	ELECTROLYTIC 100UF 10V
C 827	0201069	CERAMIC CHIP 0.1UF+80-20% 25V
C 829	0201072	CERAMIC CHIP 0.047UF+80-20% 25V
		RESISTORS
R 801	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 802	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R 803	0103864	CHIP RESISTOR 56KOHM+-5% 0.1W
R 804	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R 805	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 806	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R 807	0103880	CHIP RESISTOR 1.5MOHM+-10% 0.1W
R 808	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 809	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 810	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W

SYMBOL-NO	P-NO	DESCRIPTION
R 811	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R 812	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R 813	0103844	CHIP RESISTOR 1.2KOHM+-5% 0.1W
R 814	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 815	0103875	CHIP RESISTOR 470KOHM+-5% 0.1W
R 816	0103838	CHIP RESISTOR 390 OHM+-5% 0.1W
R 817	0103849	CHIP RESISTOR 3.3KOHM+-5% 0.1W
R 818	0103868	CHIP RESISTOR 120KOHM+-5% 0.1W
R 819	0103853	CHIP RESISTOR 6.8KOHM+-5% 0.1W
R 820	0103856	CHIP RESISTOR 12KOHM+-5% 0.1W
R 821	0103859	CHIP RESISTOR 22KOHM+-5% 0.1W
R 822	0103865	CHIP RESISTOR 68KOHM+-5% 0.1W
R 827	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R 828	0103870	CHIP RESISTOR 180KOHM+-5% 0.1W
R 829	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
RT 801	5007715	SEMI VARIABLE 10KOHM
RT 802	5007711	SEMI VARIABLE 47 OHM
RT 803	5007468	SEMI VARIABLE 1MOHM
RT 805	5007468	SEMI VARIABLE 1MOHM
		SEMI-CONDUCTORS
D 801	5331002	TRANSISTOR 1SS81
D 802	5328321	DIODE MA151K (MH)
D 803	5380691	LED SLR34UR5
IC 801	5364742	IC BA7125L
Q 801	5328211	TRANSISTOR 2SA1121C(SC)
Q 802	5328241	TRANSISTOR 2SC2463E(DE)
Q 803	5323831	TRANSISTOR 2SD974
		TRANSFORMER
T 801	5240323	TRANSFORMER,FLYBACK
		COILS
L 801	5152612	CHOKE COIL 220UH
L 802	5152607	CHOKE COIL 100UH+-10%
L 803	5244002	LINEAR COIL
		MISCELLANEOUS
CS 801	5886231	SOCKET,CRT

SYMBOL-NO	P-NO	DESCRIPTION